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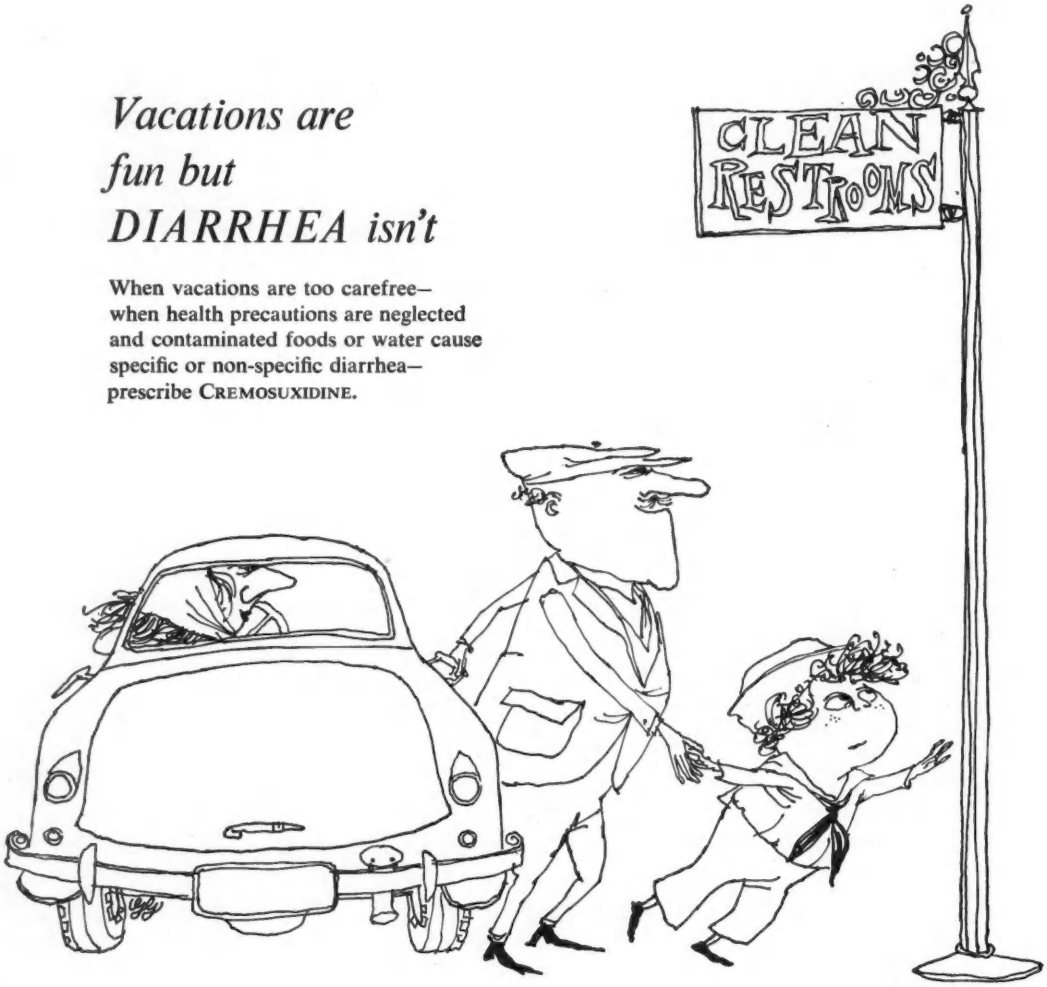

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Gamma Globulin

Status of Availability for Prevention of Poliomyelitis

WILTON L. HALVERSON, M.D., and
ROBERT M. DRAKE, M.D., San Francisco

• A limited and temporary preventive effect has been noted for gamma globulin used under certain conditions. There is available a supply of gamma globulin which is inadequate to meet the demand with the methods of use indicated in the light of present knowledge.

All supplies of gamma globulin have been placed under the responsibility of the Office of Defense Mobilization. Supplies allocated to the state of California are being made available to physicians through their local health departments on the basis of past and current incidence of poliomyelitis for use in protecting persons in household contact with patients with diagnosed cases. The most effective use of California's allocation of this material can be expected to prevent or modify approximately 40 cases on the basis of the past five-year experience (1947-1951). Parents, physicians and health officials must know the facts and cooperate to make the best of a difficult situation.

THIS SUMMER parents, physicians, and health departments will be concerned about the availability of gamma globulin for use in the prevention of poliomyelitis. With the intense interest that will undoubtedly develop, it seems timely to review the available facts about gamma globulin and its effectiveness, the possible methods for use, the available amounts, and the plans of interested and responsible groups at national, state, and local levels to use a scarce material in the most fair and effective manner.

Since the major impetus to the use of gamma globulin resulted from the field trials reported by Hammon and co-workers,[7,8,9,10] it would seem desirable to summarize their methods of study and the available results, and to note the features as yet unpublished which may be of crucial importance in the final evaluation of the role of gamma globulin in prevention of poliomyelitis.

Specific criteria and controls were used, in an attempt to avoid mistakes due to biased observations or chance variation. These included: (1) Assuring statistically significant results by including a sufficient number of participants. (2) A randomized procedure for injecting all volunteers, half receiving gamma globulin and half receiving gelatin, without anyone's knowing (until evaluation was completed) which subjects received which material. (3) Final analyses based only on paralytic cases.

To obtain sufficient numbers of cases, areas were selected which were experiencing severe epidemics and, furthermore, which had a large enough population to allow a sufficient duration of the epidemic

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Dr. Halverson is Director and Dr. Drake is Medical Officer of the California State Department of Public Health.

to evaluate this temporary immunizing agent. Populations of 50,000 to 100,000 were found best suited for this purpose. Three areas were selected where there were unusually high rates. In the Provo and the Sioux City studies, the annual morbidity rates, respectively, were 160 and 427 per 100,000 population for all ages. At Houston, the rate for that city and county was 82 per 100,000 population.

Injections were given to children in the age group 1 to 11 years. In all, approximately 55,000 children received injections—half with each material. One hundred and four cases occurred in the study group following these injections. Thirty-one occurred in those receiving gamma globulin and 73 in those receiving gelatin. No significant difference between the two groups was noted in the number of cases developing in the first week after injections (12 in the gamma globulin group, 16 in the gelatin group.) A marked difference was noted between the two groups in the second week (3 in the gamma globulin group and 24 in the gelatin group). The difference persisted through the fifth week after injection but the numbers were increasingly smaller. There was a suggestion of protection in a smaller proportion of children in the sixth through the eighth week after injection.

In addition to the evidence for prevention, in those cases occurring within one week after injection of gamma globulin, there were indications that the severity of the disease was significantly modified.

For the three study areas the average ratio of effectiveness was approximately 2 cases prevented or modified per 1,000 persons who received the injection. This ranged from a low of 0.8 cases per 1,000 in Houston to over over 4 cases per 1,000 who received the injection in the Sioux City area.

In addition to the clinical studies, blood and stool specimens were obtained and epidemiologic data collected. The findings based on these data have not yet been reported. Nonetheless, they may give information indicating whether gamma globulin interferes with natural infections which lead to subsequent immunity. This feature, and additional epidemiologic evidence now being analyzed, are of importance in establishing the eventual role of gamma globulin in this disease.

With the reports emanating from the Hammon studies, concern developed that the demands for gamma globulin would exceed the available supply for the summer of 1953. The Office of Defense Mobilization is the national allocating authority for this material. The total available supply from the various sources has been estimated to be about 6 to 7 million cubic centimeters of gamma globulin by July 1, 1953, which is less than 1 million average doses (0.14 cc. per pound of body weight).

A number of factors limit the value of gamma globulin. It gave only temporary protection in the groups studied by Hammon and not all persons inoculated were protected. (For example, during the week of greatest protection 10 per cent of the cases occurred in those inoculated with gamma globulin.[12]) There is no practical way of determining what person is susceptible or, conversely, immune. There is incomplete information as to what constitutes an effective exposure and there is usually uncertainty as to the time the individual is exposed. Furthermore, it is estimated that there is only one recognized case per 100 or more infections. Yet these undiagnosed infections may well serve as a source of virus. If there were methods for ascertaining easily some of the above unknowns, the available supply of gamma globulin might be adequate. However, with the lack of clear-cut indications for use, it appears that the available supply will be inadequate to meet the demand. Thus, it was necessary to establish some "ground rules," so to speak, so as to insure that the supply will be used in the most effective way for all persons concerned.

Among various proposals, two methods have received the most consideration. Each may be considered complementary to the other. The first is the mass community approach of injecting individuals of the most susceptible ages in areas experiencing severe epidemics. This was the method used by Hammon and co-workers. Advantages and disadvantages of this method have been summarized as follows:[4]

"1. The efficacy of the method has been demonstrated in critical tests to prevent or modify on the order of two cases of paralytic illness by the inoculation of 1,000 children in selected age groups.

"2. By this method, an effort may be made to authoritatively restrict the use of a scarce substance to those individuals and locales where maximum benefit may be obtained.

"On the other hand: (1) Mass use requires advance prediction of areas where high attack rates may be anticipated and such prediction is exceedingly difficult. (2) Mass use is decreasingly efficient as the total attack rate decreases, it is decreasingly efficient in very sharp or very prolonged outbreaks, it is decreasingly effective as use is extended into those age groups at lower risk of illness. (3) To achieve results comparable to those of the field experiments would require the maintenance of a highly organized central body with the authority to make prompt and final decisions, to thoroughly evaluate individual situations in which mass prophylaxis may be employed. (4) With the present estimate of the supply of gamma globulin which will be available in 1953, relatively few and scattered areas would receive allotments for mass pro-

phylaxis. Nevertheless, requests for such allotments would be many and would engender a variety of disconcerting pressures on the allocating body."

A second method involves giving gamma globulin to persons who have been in contact with patients known to have the disease. There is epidemiologic evidence that members of a household or family are at a definitely increased risk of developing recognized illness than are the general public.[4, 10] Table 1 presents an estimate of the numbers involved, the important time relationships, and the degree of possible prophylaxis. Unpublished data collected in California in recent years are in general accordance with these estimates.[3]

Of 1,000 paralytic cases, approximately 50 cases will occur in families secondary to an initial case. Of these, 30 will occur simultaneously or so soon after the onset of the first case that no effect from use of gamma globulin can be expected. Fifteen cases will occur from 6 to 12 days after the first case. These cases may be modified. Only five cases can perhaps be prevented. This appears to be a small effect, but Hammon stated that the results obtained should be equal to or better than those resulting from mass prophylaxis except in severe community epidemics.[10]

In addition to the effectiveness noted, other advantages would appear to exist in using a method related to household contacts. These would include: (1) Distribution of gamma globulin can be made equitable and related to the occurrence of cases during the current season. (2) Distribution of gamma globulin may be carried out through already established administrative channels. (3) Criteria for use of gamma globulin in household contacts are relatively easily defined. (4) Use for household contacts requires a relatively small share of the estimated available supply—leaving some available for other categories of use.[4]

TABLE 1.—*Estimated number of secondary cases in households per 1,000 cases of paralytic poliomyelitis by interval between cases and degree of prophylaxis

Days Interval Betweeen Index and Secondary Cases	Number of Secondary Cases Per Thousand Paralytic Cases	Per Cent Secondary Cases	Degree of Possible Prophylaxis
0- 5 days	30	60	None
6-12 days	15	30	Modification
13-30 days	5	10	Prevention
Total.....	50	100	

*See references 10 and 12.

NATIONAL PLANS

On April 15, 1953, a national plan for the allocation of gamma globulin was issued. Of the available supply, 57 per cent is allocated to states and territories on the basis of past and current experience. Thirty-three per cent is held for mass community use in severe epidemic areas, and 10 per cent is kept as a national reserve for unusual or special situations. The state health officer is responsible for the distribution and modes of use of the portion allocated to each state.

ESSENTIAL ELEMENTS OF THE STATE PLAN

An Advisory Committee was appointed by the California State Board of Health, with representation from the state medical and osteopathic associations, the Conference of Local Health Officers, and technical experts, to assist the Director of Public Health in developing a plan for California. After reviewing the available evidence, the Advisory Committee recommended a plan with two basic premises: First, that the national recommendations be accepted, and second, that the state plan be as specific as possible so as to allow the most effective use of a limited material on a statewide basis.

Ninety per cent of this basic allotment to the state will be distributed to cities and counties on the basis of past and current incidence. A state reserve of 10 per cent will be established for unusual and emergency situations.

Of the 90 per cent portion, one-third will be sent to each city and county where full-time public health departments exist and to the county health officer of counties without full-time health departments. Additional amounts may be had upon request of the local health officer in accordance with the current incidence of the disease in that area. Should additional supplies in excess of the state's basic allotment be received, they will be apportioned to those areas experiencing an increased incidence over the five-year mean (1947-51).

The material is to be available for use in selected household contacts of diagnosed cases. These contacts are those persons 30 years or under and pregnant women of any age. The following features were considered in selecting these criteria:

1. Household contacts of a known case have a greater risk of developing poliomyelitis than the general public.[4, 10]

2. Studies of virus distribution in communities show a concentration in households where cases develop.[6]

3. Ninety per cent of reported cases of poliomyelitis in California for the last five years occurred in the age group under 30 years. Only 10 per cent of the cases occurred in the older age groups which include one-half of the state's population.

4. Pregnant women are at an increased risk of having the disease.[1]

Information to be required from the physician for the obtaining of gamma globulin includes the identification of the case (name, age, sex and address of the patient, the date of onset, and type of disease) and the names, ages, and weights of eligible contacts.

The exact methods of collecting records and distributing gamma globulin will be determined in each local area. It is recommended that physicians and health officers work out these arrangements together. Health officers have agreed that in areas with several health departments serving overlapping population and physician concentrations, methods will be developed to assure the maximum convenience to the physicians and people affected.

A local health officer may send a request through the state health officer for a supply to undertake a mass prophylaxis in the event of a severe epidemic. After investigation and on the recommendation of the State Advisory Committee, this request may be forwarded to the Office of Defense Mobilization. Criteria are being developed nationally for the determination of when an area becomes eligible for such use of gamma globulin.

What can be expected of these methods as applied to California this year? For purpose of illustration, let us consider that California will have an average year of 3,000 cases, and will receive approximately 180,000 cubic centimeters of gamma globulin (18,000 average doses). If California used its entire supply for mass community prophylaxis under conditions as suitable as those reported by Hammon and co-workers, approximately 36 cases of poliomyelitis may be prevented or modified out of the 3,000 cases. Recent California experience, however, makes it seem unlikely that a situation meeting the proposed criteria for mass prophylaxis will ocur. Hammon does not recommend mass community prophylaxis unless an area experiences an annual morbidity rate of 160 or more per 100,000 population for all ages.[10] In the past five years, no county in California has experienced such rates (see Table 2). This discussion is limited to the past five years, since the pattern of incidence appears to have changed from a low endemic pattern with recurrent epidemics to a higher endemic level (see Table 3). As to California cities in the population range from 15,000 to 51,000 (the national plan suggests that cities in this range are the most likely to experience these severe epidemics), it is noted that only six outbreaks with rates over 160 per 100,000 occurred in cities of this size in the past five years (see Table 4). All six occurred in cities which are in metropolitan areas, and for that reason it might be difficult administratively or scientifically to justify selecting such areas for mass community prophylaxis in preference to contiguous areas.

According to Hammon and co-workers, family or household contact prophylaxis after the diagnosis of a case should produce benefits equal to or better than those produced by the mass community methods in all areas except those of the most severe epidemics.[10] Based on an average year in California of 3,000 cases, of which about 70 per cent are paralytic, it is estimated that approximately 40 cases of paralytic poliomyelitis could be modified or prevented by this method. This is essentially the same as would obtain using the mass community technique under the circumstances described by Hammon.

TABLE 3.—*Reported cases of poliomyelitis and case rates—California, 1940-52

Year (Calendar)	Population† July 1 Estimated	Reported Cases	Rate per 100,000
1940 Census	6,980,000	440	6.3
1941 Estimated	7,306,000	237	3.2
1942 Estimated	7,859,000	365	4.6
1943 Estimated	8,428,000	2,655	31.5
1944 Estimated	8,832,000	428	4.8
1945 Estimated	9,148,000	950	10.4
1946 Estimated	9,548,000	2,239	23.4
1947 Estimated	9,864,000	735	7.4
1948 Estimated	10,165,000	6,070	59.7
1949 Estimated	10,434,000	2,623	25.1
1950 Census	10,634,000	2,313	21.7
1951 Estimated	11,100,000	3,198	28.8
1952 Estimated	11,460,000	4,047	35.3

*Source: Morbidity Records, Bureau of Acute Communicable Diseases, California State Department of Public Health.

†Estimates of State Department of Finance—November 1951, p. 14, prepared by Carl M. Frisen.

TABLE 2.—*Poliomyelitis—annual cases per 100,000 population in counties of California, 1948-1952 inclusive*

County Population in Thousands	Number of Counties	Total County Years	Case Rates per 100,000 Population								
			150+	100-149	75-99	50-74	30-49	15-29	1-14	Too Few for Rates	No Cases
500+	4	20	....	....	1	1	5	10	3	....	....
200-299*	9	45	....	1	1	....	22	21	....	....	....
100-199	7	35	....	....	....	4	12	14	5	....	....
50- 99	8	40	....	2	3	6	7	16	6	....	....
15- 49	15	75	....	2	3	3	17	24	13	9	4
Less than 15	15	75	....	1	5	3	7	9	1	23	26
Total	58	290	....	6	13	17	70	94	28	32	30

*There are no counties with populations between 300 and 500 thousand.

TABLE 4. — *Poliomyelitis—annual case rates per 100,000 in selected cities of 15-51 thousand population, 1948-1952 inclusive*

City Population in Thousands	Number of Cities	Total City Years	Case Rates per 100,000 Population								
			150+	100-149	75-99	50-74	30-49	15-29	1-14	Too Few for Rates	No Cases
45-51	6	30	....	3	....	4	9	11	3	....	....
35-44	3	15	....	1	....	1	8	1	4	....	....
25-34	9	45	....	3	6	4	13	10	7	2	....
20-24	12	60	3	2	1	15	14	14	6	1	4
15-19	17	85	3	1	8	13	23	25	6	5	1
Total	47	235	6	10	15	37	67	61	26	8	5

With the state plan as adopted, California should benefit from both of these methods. The basic allotment of 180,000 cubic centimeters is to be used for household contacts of persons with diagnosed cases. If suitable epidemics develop, a request can be made for gamma globulin for mass community prophylaxis. As will be noted, the total net effect from either method or both, with the available supplies, will be very small. Only 1 to 2 per cent of all reported cases in the state will be affected by either of these methods. That is to say, on the basis of present information, there will be no effect on the bulk (98 per cent or more) of the reported cases of poliomyelitis in the state.

In using the household contact method, two dilemmas arise at once. First, a rigid definition of "household contact," although it seems necessary to conserve a scarce material for use in a population at definitely increased risk, may sometimes work hardship in a particular situation. Nonetheless, it was felt by the State Advisory Committee that if gamma globulin were used for non-household contacts (and where would the line be drawn among this group?) not only would the supply be quickly exhausted without obtaining any effective results, but the possibility of getting additional data on the effectiveness of this method would be spoiled. Second, the establishment of a diagnosis of non-paralytic poliomyelitis may present difficulties. Especially this is so in the areas where the arthropod-borne encephalitides are endemic.

"There is one subjective disadvantage which should not be overlooked," it was pointed out in a report by the National Research Council.[12] "Some 60 per cent of secondary family cases will be neither prevented nor modified by the use of gamma globulin [since 60 per cent of cases occur within 0 to 5 days of the first case]. Unless physicians and the public are fully informed of this situation, an unjustifiably critical attitude toward the value of gamma globulin may develop. The public will see the failures of prophylaxis; the successes will be hidden from it."

Health officers and private physicians are together confronted with an unusually difficult problem. Not only is gamma globulin in very short supply but in spite of its limitations the public has been led to believe that it is an effective preventive for poliomyelitis. Health officers must therefore work closely with physicians in private practice and constantly keep the people of California informed on the facts regarding gamma globulin and the current incidence of poliomyelitis.

760 Market Street.

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The Growing Problem of Suicide

RICHARD A. KERN, M.D., *Philadelphia*

AN EVER INCREASING number of persons in this country have asked themselves the question, "To be, or not to be?" and have come up with the negative answer, so that today suicide stands eleventh on the list of causes of death. Moreover, true figures would be higher, since there is much false recording because of the social and religious stigma which self-destruction implies. Likewise, suicides made to look like accidents, especially by automobile, in order to collect double indemnity instead of no insurance, far outnumber the few instances in which apparent suicide is actually murder.

Suicide is preventable. It occurs from causes and in circumstances which are overwhelmingly temporary and remediable. Failure of physicians to prevent self-destruction by patients is owing not so much to ignorance of causes as to failure to recognize the signs and symptoms of impending suicide in the course of daily medical practice. Since the suicide rate on the west coast is higher than in almost any other part of the country, the subject is particularly worthy of study and discussion here.

• *Informed as to the epidemiologic aspects of suicide and as to warning signs, physicians could, by appropriate action, prevent self-destruction in many cases.*

Not only ought each physician's office be a suicide prevention station, but all physicians ought to act in concert to gather data, to carry out a program of public instruction and to enlist the aid of the press in an effort to reduce the ever-increasing rate of suicide.

CAUSES OF SUICIDE

The *known causes of suicide* may be grouped (1) as the factors inherent in the patient and (2) the extrinsic environmental factors. In every case factors of both types are involved. If the inherent cause is of great import, it will take little pressure from without to tip the balance, and vice versa.

The chief inherent factor is *mental abnormality*. In 35 to 40 per cent of suicides this is frank psychosis. In another 45 to 50 per cent there is definite psychoneurosis that involves a variety of inner conflicts. In less than 15 per cent does some organic disease contribute an inherent factor adequate to lead to suicide, and even in these cases there is usually just enough of a mental factor to decide the issue.

Fully a third of all suicides have a committable psychosis at the time of self-destruction. In 70 per cent this is a manic-depressive condition in the depressive phase. In the non-psychotic but neurotic patients an exaggerated depression is routinely a part of the picture.

From the Department of Medicine, Temple University School of Medicine, Philadelphia, Pa.

Guest speaker's address: Presented before the General Meeting at the 82nd Annual Session of the California Medical Association, Los Angeles, May 24 to 28, 1953.

The first point to stress, then, is that the mental disturbance, the depressed state, is in the overwhelming majority of cases a *temporary* one. This means in the first place that if the mental disturbance is recognized and the patient is protected against himself, his suicide can be prevented. It further means that recovery from the mental disturbance can be hastened by treatment appropriate to the condition, ranging from psychotherapy to electroshock. It also means, as the physician and relatives must be made to realize, that the situation cannot be met by reasoning: the suicidal patient can be influenced by suggestion, but not by pure logic.

Here is some evidence to support the thesis that suicide is usually based on a mental aberration. (a) Suicide is the commonest cause of death in all the insane except only in the very aged. (b) The means of self-destruction is often obviously irrational: A patient on the 17th floor of a hospital does not jump, but hangs himself out the window by a cord fastened to the radiator in the room. A woman crawls halfway into a furnace, to be fatally burned when the pilot flame touches off the oil burner. A man drives two 8-centimeter nails into his skull with a hammer. Another injects himself with 2,000 units of insulin. As Menninger[5] pointed out, the method of suicide is more determined by the phantasies of the individual than by the opportunities available. (c) Rarely is insufferable pain a factor, but rather an obsessive hypochondriac concentration on a trivial ailment or an exaggerated dread of consequences: the fatigued brain worker thinks he is going mad; indigestion is magnified into cancer. (d) The depression which precedes the act is far out of proportion to the cause of depression.

Of course there are those who take their lives to escape an intolerable situation:

> . . . The whips and scorns of time,
> The oppressor's wrong, the proud man's contumely,
> The pangs of despised love, the law's delay,
> The insolence of office, and the spurns
> That patient merit of the unworthy takes . . .

In this group there are indeed logical deterrents:

> Whether 'tis nobler in the mind to suffer
> The slings and arrows of outrageous fortune,
> Or to take arms against a sea of troubles,
> And by opposing, end them . . .

Such persons might be argued out of their resolve. Here, too, a moral deterrent may operate:

> For in that sleep of death what dreams may come
> When we have shuffled off this mortal coil,
> Must give us pause . . .

Only in this group are found those who would have been considered wholly "sane" or without psychic taint. As Gruhle[2] pointed out, they are most likely to be the aged: life-weary, lonely, keenly aware of their own decline, faced with enforced idleness and refusing to adapt themselves to changed circumstances. Yet among such persons, too, even in cases of deaths most carefully planned, it is common, as Henderson[3] observed, to find the recent mental aberration which at the last brings the plan to execution.

EPIDEMIOLOGY

The *epidemiology of suicide*, a term aptly stressed by Gordon and co-workers,[1] deals with the collecting and analysis of data about things that tend to *precipitate* suicide, and also those that *defer* suicide in persons so disposed. Much has been accomplished in this field, but much remains to be done in the study of new case material which has had the benefit of modern diagnostic methods. The available facts deserve attention, since they point the way to the recognition of potential suicide and to means of prevention.

Age. There is a steady increase of incidence of suicide from age 5 to 50 in both sexes. Then the rate levels off in women for the rest of life. But in men it continues to rise into the oldest age brackets.

Sex. Three times as many men as women kill themselves.

Race. Four times as many white persons as Negroes are suicides.

At this point distinction must be made between *attempted* and *successful suicide.* More women try than men, more Negroes than white persons.

One must further differentiate between *false* and *genuine suicidal attempts.* The genuineness of an attempted suicide must not be judged merely by success or failure, for success depends to a considerable degree on available methods. In this country 40 per cent of the men who killed themselves used firearms. In Denmark only 2 per cent of males could avail themselves of such means. Women have a tendency to use non-violent methods, such as poisons, or illuminating gas. Such methods, especially barbiturates, are slower acting and give time for applying life-saving measures. *False attempts* are more likely to involve the use of "phony" methods, as when the lady swallows iodine in the presence of her lover. False attempts should not be labelled bungling, since the attempt is often an end in itself: a desperate appeal to society, a means of making contact with the group, as Stengel[6] pointed out.

Season. Suicide is more frequent in May and June in the United States. (In Australia it is January and February.)

Weather. More people kill themselves on clear sunny days with a rising barometer than on dark, rainy "depressing" days.

Climate. Suicides are fewest in the torrid zone, most in the temperate zones; and in this country more in the north than the south.

Day and hour. Suicides are most frequent on Monday and Tuesday, and oftener in the mornings, earlier in the army (5 to 9 a.m.) than in civilian life (10 a.m. to 2 p.m.).

Heredity may play some part in suicide; family certainly does. However, Kallmann[4] reported that if one of uniovular twins kills himself, the other rarely does; this may be because he has lost his rival, but it could also be due to difference of attending circumstances.

SOCIAL FACTORS

Social factors are of manifold and great significance. Aloneness, lack of satisfactory contact, heads the list. Thus, suicide is more frequent in the single than the married, more frequent still in the widowed, and most frequent in the divorced. It is more frequent in the loneliness of crowded cities than in suburbs, or smaller towns where it is hard for a person to be unknown. Suicide is commoner among immigrants than native-born. The rich have a higher suicide rate than the poor. Stengel[6] found that 22 per cent of suicides lived alone, as compared with only 6 per cent of single dwellers in the general population. Suicide is more frequent in prosperous than in bad times, except perhaps for those hardest hit. (One remembers the quip of depression days by the hotel clerk to the prospective guest requesting a room on an upper floor: "Sleeping or jumping?") Business and professional men have a higher suicide rate than laborers, while twice as many physicians kill themselves as do other males. Self-destruction

is more frequent among leaders than those led: for instance, among officers than enlisted men.

As Gordon[1] pointed out, the social acceptability of suicide, and therefore its incidence, varies widely in different parts of the world. In Europe and China, a loss of face makes suicide acceptable, especially in the young. In this country, suicide carries a definite stigma that makes it unacceptable, especially in the young. Yet suicide in the aged is relatively rare in China, while in this country the aged find it more acceptable.

PERSONAL FACTORS

Personal factors are again mentioned in regard to mental make-up, psychic traits and motivation, that may be the cause of an individual's maladjustment in, or his inadequate or abnormal reaction to, society. There come to mind such things as chronic alcoholism; sexual inversion; failure in love, marriage or public service; poor child-parent relations, the chief cause of child suicides that are meant to injure the offending parent. Here there is much room for study, as Gordon has suggested, through pooling of experiences by physicians in a clearing house or commission on suicide.

Closely related to such personal factors is the phenomenon of *psychic contagion*, so frequently observed in the cases of those who kill themselves. It shows itself frequently in the *imitation of method* used by another. If someone jumps off a bridge or takes an unusual poison, there are likely to be imitators in a few days. Even suicide by rubbing the neck across a barbed-wire fence has been copied, according to Walsh.[8] Forty years ago, after a wave of suicide by taking bichloride of mercury, the deletion for a time from newspaper accounts of mention of the drug used was followed by a lessening of such cases. It has even been suggested that an occasional person kills himself with the thought that the newspaper report will deliver him at last from the anonymity of a frustrated life. It would indeed be worth a trial to see if the limitation of suicide notices to minor accounts on an inside page, with no mention made of the method, would result in a lowered suicide rate.

Certainly what people read may be the spark that fires the resolve to self-destruction. Sophocles wrote the tragedy *Ajax* twenty-three centuries ago, but men still die by their own hand after reading it. Goethe in 1774, when on the verge of suicide at 25 because of an unhappy love affair, wrote a book *Die Leiden des Jungen Werthers*, the tragic story of an unhappy lover who ended his life with a pistol. The book was an immediate success, with translations into many languages including the Chinese, and made Goethe famous overnight. Moreover, in writing the book, he ventilated and dissipated his own troubles. But there was a wave of suicides around the world, as love-sick swains blew their brains out while clutching a copy of *Werther*.

There are also important *deterring factors* in the epidemiology of suicide. The rate always falls during *wartime*, perhaps because many men enter military service where their loneliness is set aside by becoming a member of the group. Indeed, suicide among women actually increases during wartime, as a result of introversion, loneliness and bereavement. Suicide decreases during *times of disaster*. In San Francisco there had been an average of 12 suicides a week before whatever it was that happened there on April 18, 1906; there were only three suicides in the two months that followed. Life becomes more precious when it is a struggle to keep it. Troubles, even illness, up to a certain point may strengthen mental balance. Even when trouble is great, religion has made a virtue of affliction (witness the example of Job).

Religion is a most important factor in the incidence of suicide, but its influence can work in either direction, depending on the basic philosophy of the religion and of those who profess it. In the United States self-destruction is least common among Orthodox Jews, next among Catholics, and most common among Protestants and Reformed Jews. But oriental religions place lower values on human life and they even demand suicide in certain circumstances: witness the rite of *hara kiri* in Japan, and of *suttee* in India. When the suicide rate in the United States was 15.5 per 100,000, the figures for Japan and China were 26 and 45 respectively. As Henderson[3] pointed out, in the western world religion and education play important deterrent roles not only by teaching moral principles, but also by fostering a sense of solidarity in the community.

Fear of disgrace can be a potent restraining factor. Plutarch wrote of a strange epidemic of suicide in Milesia among young women who preferred death to matrimony. The epidemic was stopped abruptly by a decree that the body of each suicide should be displayed naked in the market place. In 1875 an increasing suicide rate in southern Europe was halved within a year by the decision of the Catholic Church to deny religious burial in consecrated ground to those who took their own lives. In this connection it is pointed out that the Catholic Church requires a physician's opinion on the mental state of a suicide at the time of his death: religious burial is denied unless (1) the person repented when dying, (2) did not commit the act with free judgment, (3) was of unsound mind at the time, (4) one

of the first three could apply but could not be proved. There is no penalty if a boy be 14, a girl 12, or less.

DIAGNOSIS

The *diagnosis of potential suicide* is based on the application of these cardinal points: (1) *All depressed persons* are potential candidates for self-destruction. (2) Especially *all manic-depressive* patients can be. (3) *All who have once attempted suicide* can do so again, even years later. (4) *Those who speak of suicide,* and to whom the idea of self-destruction seems in the least attractive, must be watched. Those who speak of a fear of suicide are in less danger. (5) Those who have sharply lost interest in things once prized are suspect.

What of those who only *think* of suicide? Here it is important to reassure audiences, especially medical students, to whom one is talking about suicide, that merely *thinking* about suicide is not dangerous. Surveys of student groups, made under cover of anonymity, have shown that 12 per cent have never thought of self-destruction, 8 per cent have thought of it only with abhorrence, but 80 per cent have at some time entertained the question, "To be, or not to be?"

The *warning signals* of suicidal depression have been well stated by Wall:[7] (1) *Depression* with expression of guilt, tension and agitation; (2) *insomnia,* with great concern about it; (3) *severe hypochondriasis;* (4) *fear of losing self-control* and of hurting others and self; (5) *previous attempts;* (6) *suicidal preoccupation* and talk. By strict attention to these premonitory signs in the inmates of a New York hospital, it has been possible to avoid all suicides in a period of five years.

The *depth of depression* may be intimated by loss of appetite, of weight and of sexual desire; by slowing of action and speech; by unwillingness to meet people; by hopelessness; particularly by *agitation* in connection with the preceding ones.

PREVENTION

The *principles of prevention* of suicide follow naturally out of what has been said.

1. The recognition of the possibility of suicide and the steps to prevent it are the duty of every physician, regardless of his field of practice. Every physician's office must be a suicide prevention station.

2. It is every physician's responsibility to give a patient the chance to talk out his troubles. This is the strength of the confessional, as all the clergy know.

3. Physicians should encourage patients to come to them with their troubles, great or small; should not be impatient with them, and in particular should not scold them for bringing up seeming trifles, lest they be scared away from telling of serious troubles when they arise.

4. Physicians should be helpful with suggestions for those who are mildly troubled; especially should reassure them about minor illnesses.

5. Since loneliness leads to unhealthy brooding and introspection, physicians should encourage lonely persons to participate in group activities. Certainly such persons should *not* be sent, "for a change," to some resort where their loneliness is only accentuated.

6. The comforts of religion can be the most potent therapeutic aid.

7. Physicians should promptly refer to a psychiatrist every patient who is in an agitated depression, or who is attracted by suicide or who has ever tried it. If any possibility of suicidal thinking is suspected, the patient must tactfully be asked about it to get his reaction. (If the threat is imminent and the patient refuses to see a psychiatrist or go to a hospital, someone should be told to call the police while the physician holds him in conversation, lest he kill himself upon leaving the office.)

8. The psychiatrist should place such a patient in an institution that provides constant guard as well as active modern psychiatric treatment. Only in lesser depressions may he see fit to take the calculated risk of *not* confining the patient, and that must be the psychiatrist's decision, not that of any other physician.

Some mistakes physicians must not make are to believe that: Those who threaten suicide won't try it; those who have tried one method of self-destruction will try only that method in the future; that emotionally upset persons are safe once they have shown a trend toward recovery (surveillance cannot be relaxed until recovery is complete); that suicide is preventable by an appeal to reason, morality or fear.

Finally, let physicians unite their efforts as a profession to curb the growing problem of suicide. Medical societies have committees and commissions for the prevention of deafness, blindness, infant mortality, and a lot of other things; why not a committee for the prevention of suicide? With such a committee physicians could register single observations that in the aggregate would make a wealth of source material. Through such a committee a program of public instruction that could have far-reaching effects could be carried on. It might be possible even to persuade the Fourth Estate that the news value of suicide is less than that of the lives that could be saved by playing down the lurid details of self-destruction. As a group physicians could both

interest and help the public health authorities in this endeavor which certainly has public health implications, for the public is the loser by 25,000 such unnecessary deaths each year. But whether singly or as a group, the responsibility of physicians is equally clear: to be our brothers' keepers.

3401 North Broad Street.

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CDA Shifting Blood Procurement to Expanders, Serum Albumin

A SHIFT IN PROCUREMENT from blood plasma to serum albumin and plasma expanders has been announced by Federal Civil Defense Administration which said the change is due primarily to recent "satisfactory completion of extensive field experience with expanders." FCDA's stockpile goal now calls for 7.5 million shock treatment units: 2 million units of plasma or other blood derivatives and 5.5 million units of plasma volume expanders. The agency reported it already has on hand over 1 million units of the expander PVP (polyvinylpyrrolidone) and is buying quantities of dextran.

The change in FCDA procurement followed a recommendation of the National Research Council that FCDA and Defense Department use plasma only in an emergency when approved expanders or serum albumin are not available, because plasma carries a potential risk of hepatitis. However, FCDA stressed that it has not reached its plasma goal and that blood donations under the National Blood Program are still essential.

FCDA's stockpile program is predicated on a mass attack with modern atomic weapons resulting in 5 million living casualties. It is estimated they would require 7.5 million units of plasma, serum albumin or plasma expanders as well as 7.5 million units of whole blood. The whole blood would have to be obtained by large-scale emergency blood collections.

—*A.M.A. Washington Letter*

Differential Diagnosis of Operable Disease Of the Esophagus

BENSON B. ROE, M.D., San Francisco

ALTHOUGH OPERATIVE TREATMENT of esophageal disease has progressed during the past decade from a nearly impossible to a routine task, differential diagnosis is made difficult by the fact that the esophagus throughout its length lies in intimate contact with numerous vital structures which may become involved in the disease process and may be endangered by operation or diagnostic procedure. Among the most important of these organs are the trachea and bronchi, the pericardium, heart and major vessels, the vagus nerve and its recurrent laryngeal branches, the phrenic nerve, the thoracic duct, the pleural spaces and the structures in the neck.

Clinical signs of involvement of any of these structures may be useful in localization of the disease or in determining its extent but, of course, a heavy price may be paid for this evidence. It is worth remembering that the esophagus is much less mobile and less distensible than the rest of the gastrointestinal tract, and that there is no serosal outer coating. Malignant lesions seem to occur most frequently at the three areas of natural stenosis which are also the commonest sites of stricture, of perforation and of lodgment of foreign bodies. These are (1) cricopharyngeal constriction at the esophageal introitus in the neck, (2) aortic constriction at the level where the aortic arch crosses anterior to the esophagus, and (3) diaphragmatic constriction where the esophagus penetrates the diaphragm.

DIAGNOSTIC SIGNS

Physical examination in esophageal disease is unfortunately of limited value and it is necessary to lean heavily on special studies. Inspection and palpation are impossible except to a very limited degree in the neck. Symptoms are very likely to be misleading in the early stages of the disease, but they are the indications upon which further examination can be made.

Dysphagia is of course the most common symptom but frequently patients with severe disease have surprisingly little difficulty or pain in swallowing.

Pain, if any, is usually felt in the paravertebral area, at the middle or higher in the thorax.

Assistant Clinical Professor of Surgery, Division of Thoracic Surgery, University of California School of Medicine.

• The time interval between ingestion and regurgitation and the stage of digestion in regurgitated food may be factors helpful in diagnosing disease of the esophagus. In most cases diagnosis can be made by x-ray alone, but where x-ray evidence is insufficient esophagoscopy is often justified.

X-ray investigation for foreign bodies should include films of the neck. Cough is a common symptom of the presence of foreign bodies; obstruction may result from inflammation or edema.

Perforation is most often caused by foreign bodies or by instrumentation. Esophagoscopy is hazardous in this condition and the findings are not likely to affect the course of treatment.

Hiatal hernia, although probably occurring to some degree in 10 per cent of adults, seldom causes symptoms. Inflammation resulting from hernial obstruction may be mistaken for carcinoma.

Esophageal carcinoma occurs most frequently in elderly persons and in men more than in women. Operation is necessary in many cases to prevent starvation. The postoperative mortality rate is as low as 11 to 24 per cent, and the proportion of five-year survivals is increasing.

Achalasia or cardiospasm can generally be recognized by x-ray appearance. Bouginage is the usual treatment, but operation may be necessary.

Late regurgitation of food is a common symptom of esophageal diverticulum.

Atresia in a newborn infant is a dangerous condition. The effect of any of the four types of anomaly is the same: diversion of fluids from the stomach to the bronchi. Coughing, choking and cyanosis are the common symptoms in a newborn infant.

Hematemesis may arise from a number of causes; esophageal hemorrhage most commonly is owing to varicosity from portal hypertension. Esophagoscopy is the quickest and safest method of determining whether hematemesis is of esophageal origin.

Regurgitation occurs in complete or partial obstruction. It is most important to note the stage of digestion of the regurgitated food and the interval since ingestion. Early regurgitation without acid may indicate esophageal obstruction without dilation (as caused by tumor, inflammation or a foreign body), but in the presence of achlorhydria the regurgitated material cannot be distinguished from stomach contents. Late regurgitation without acid but with some fermentation is suggestive of low esophageal obstruction with dilation above it, as in achalasia. Late regurgitation following the successful ingestion of more recent food indicates storage in a diverticulum. If acid is regurgitated with the food it is more likely that the disorder lies below the esophagus.

Roentgenological examination is always necessary for diagnosis and localization of esophageal disease and in a large majority of cases is the only procedure necessary for accurate diagnosis. Plain films may show a mediastinal mass and may indicate displacement or involvement of other thoracic structures. Contrast study with barium and visualization of motility by fluoroscope are essential for differentiating extrinsic disease and establishing the character of obstruction.

Esophagoscopy, either for direct visualization or for securing a specimen for biopsy, is clearly a very useful procedure and in many cases is the only method of establishing the diagnosis. In skilled hands it entails no great risk or discomfort, but it is not without hazard, and the necessity for it should be carefully considered. If esophagoscopy is done in contemplation of an operation, it is probably in the patient's best interest that it be done by the surgeon who is to operate, for it is to him that the information derived is of greatest value.

FOREIGN BODIES

Foreign bodies of every description have become lodged in the esophagus. When there is sudden dysphagia and mid-back pain on swallowing an unusual object, the patient makes his own diagnosis. The physician is called merely to verify that the object remains, to localize it, and to remove it. The problem is not always so simple, however, because the initial symptoms may be fleeting and mild; children in particular can have minimal discomfort and may be unable to describe their symptoms. Irritating but non-paroxysmal cough of sudden onset may be a symptom; it can be caused either by esophageal overflow into the trachea or by pressure of a foreign object on the trachea through the esophageal wall. In some cases the diagnosis is not made until days or weeks later, when complications arise: Esophagitis with fever, pain in the neck and paravertebral tenderness may have severe systemic manifestations; edema, perhaps with abscess formation, may cause obstruction if the foreign body itself did not.

Most foreign bodies can be observed by x-ray with or without contrast medium. It is important to remember that over half of such objects become lodged at the cricopharyngeal level, and nearly a third at the diaphragm; radiological search, therefore must include films of the neck as well as oblique films of the posterior mediastinum. Esophagoscopy is indicated when x-rays are inconclusive and symptoms are suggestive. The late sequelae of unremoved foreign bodies are serious enough to offset the inconvenience and discomfort of this procedure.

PERFORATION

Esophageal perforation with mediastinitis can be caused by a foreign body, trauma, inflammatory or malignant process, or esophagoscopy. Seybold and co-workers[3] reviewed the experience at the Mayo Clinic and found that two-thirds of the perforations were caused by instrumentation (endoscopy or bouginage); the remainder were caused by foreign bodies except for a few cases of spontaneous rupture or external trauma.

The first manifestations may be pain in the neck and tenderness along the sternocleidomastoid muscle, or high fever and severe systemic symptoms. Mediastinal widening seen by x-ray and/or subcutaneous emphysema verify the suspicion. Esophagoscopy in perforation is hazardous and is usually not indicated if this condition is suspected, as the decision for surgical or conservative therapy is not likely to be altered. If a foreign body remains, however, it should be removed by this method whenever possible.

HIATAL HERNIA

Hiatal hernia is probably a more common entity than the incidence of clinical cases would suggest. As radiologists routinely invert patients for upper gastrointestinal studies many asymptomatic cases are discovered (reports suggest that as many as 10 per cent of the adult population have some degree of herniation). Unfortunately, however, the condition is sometimes overlooked. The typical symptoms —epigastric distress, bloating, belching, anorexia, loss of weight and retrosternal pain—lead in many cases to a suspicion of peptic ulcer, gallbladder disease or even coronary thrombosis. Those unfortunate patients in whom routine studies disclose some abnormality in support of another diagnosis may be subjected to unavailing gastric resection, cholecystectomy or severe curtailment of activity. The "classic" history that symptoms occur when the patient reclines and are relieved on standing is in fact

relatively uncommon. Regurgitation of stomach contents through the displaced cardia may produce esophagogastritis and ulceration—often associated with duodenal ulceration. Thus symptoms sometimes are partially controlled by having a patient follow the usual regimen for treatment of ulcer, without establishing the correct diagnosis.

Not infrequently hiatal hernia is the source of gastrointestinal bleeding. The presenting problem may be asymptomatic anemia, episodes of massive hematemesis, or even melena. For differential diagnosis, therefore, it may be necessary to consider the entire range of gastrointestinal disease from esophageal varices and peptic ulcer to lower bowel neoplasm. Because hiatal hernia is so often an incidental finding of no consequence, it is necessary to rule out other sources of bleeding before subjecting the patient to operative repair.

There are two main types of hiatal hernia. The relatively rare so-called para-esophageal type is less likely to cause symptoms save for extreme cases of the kind popularly termed "upside down stomach." In such cases much of the upper abdominal viscera may be inverted into the left side of the chest cavity. The esophagus is normal and the cardia is below the diaphragm, but the fundus of the stomach extends with a peritoneal sac into the chest through a separate defect in the diaphragm. For that reason, this is not a true hiatal herniation and were better called "parahiatal." The other type is a sliding hernia through an enlarged esophageal hiatus. The cardia is displaced upward and the stomach wall forms one side of the hernial sac. Retraction of the esophagus often develops, but at operation the cardia can be drawn down beneath the diaphragm, justifying therefore the designation "acquired short esophagus." In other cases there is so much permanent retraction—perhaps from inflammatory scarring—that the cardia cannot be replaced; this condition is arbitrarily labelled "congenitally short esophagus." As reports indicate that in experienced hands a progressively higher percentage of such malformations are reducible, true congenitally short esophagus is probably quite rare.

The most important point in differential diagnosis by x-ray and esophagoscope is the frequent similarity in appearance between inflammatory obstruction and carcinoma. A negative finding at biopsy is not always reliable and sometimes the diagnosis cannot be established except by operation.

NEOPLASMS

Esophageal carcinoma has insidious onset and is usually not discovered until obstructive symptoms arise. About 85 per cent of the cases are in men and more than half are in persons over 65 years of age. The diagnosis should be suspected in any patient, particularly an older person, who has difficulty in swallowing solid foods. By a swallow of barium, in many cases, a mucosal defect may be shown which is sufficient for definitive diagnosis. Esophagoscopy for visualization and biopsy of the tumor should be done when any uncertainty exists. Obstructive symptoms also occur, of course, in stricture, hiatal hernia, and cardiospasm, but usually the differentiation by x-ray is not too difficult. Early evidence of metastatic disease may be manifest in supraclavicular nodes and it has even been suggested that routine biopsies of this area be done even if no nodes are palpable.[2] Recurrent laryngeal nerve paralysis, as evidenced by hoarseness, or phrenic nerve paralysis, as observed fluoroscopically, may be grave indications of disease extension, but probably in themselves should not be taken as proof of inoperability, since pressure alone can produce paralysis without actual invasion of the nerve.

Many patients with esophageal carcinoma are in poor condition for major operation because of advanced age, commonly associated with cardiovascular disease, and severe nutritional depletion. The considerable risk is justified, however, merely as the most satisfactory method of preventing imminent starvation and prolonging life, particularly now that the operation in experienced hands has a mortality rate of 11 to 24 per cent, depending on location of the lesion. A gratifying increase in the proportion of three-year and five-year survivals[4] makes the large effort even more worth while.

Benign neoplasms of the esophagus are strangely quite rare compared with malignant growths. Lipomas, fibromas, papillomas and leiomyomas are usually smooth and not too difficult to distinguish either by x-ray or esophagoscopically.

ACHALASIA

"Cardiospasm"—better called achalasia—is a difficult problem about which there is considerable disagreement as to both cause and treatment. The diagnosis is suggested by regurgitation of undigested food which has been retained for some time. Often the esophagus becomes immensely dilated, redundant and atonic. The typical x-ray observation of a wide fusiform or tortuous mediastinal shadow with air-fluid level is not usually mistaken for anything else. Secondary inflammation is rare, but when it exists esophagoscopy and biopsy are necessary to rule out the possibility of obstructing malignant lesion at the cardia. Operation should be considered only in the 10 to 20 per cent of cases in which no improvement is obtained with dilatation by bouginage. The long-term operative results do not at present warrant routine operation.

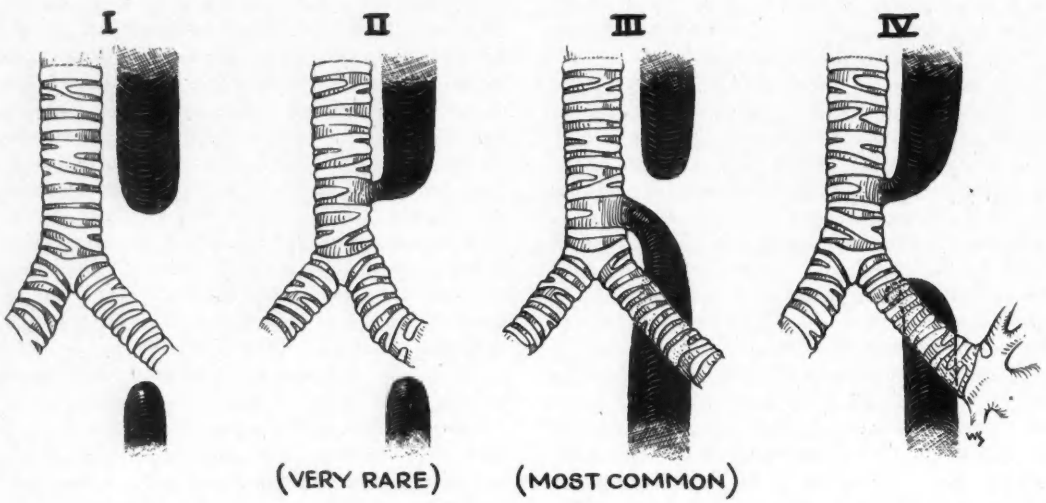

Figure 1.—The four types of esophageal atresia.

DIVERTICULUM

"Pulsion" diverticulum arises as an outpouching through a congenital defect in the posterior pharyngeal musculature, and thus is not truly esophageal in origin. If the cricopharyngeal muscle at the esophageal introitus does not relax sufficiently, the powerful swallowing mechanism may build up abnormal pressure in the pharynx. Such a diverticulum usually is noted on the left side of the neck as an inconstant tumor in which a splash may be heard on succussion. The path of swallowed food is always first into the diverticulum until the space is filled. Food may remain in the sac for some time and be regurgitated hours or days later. A rare form of pulsion diverticulum occurs just above the diaphragm and may at first be mistaken for a posterior mediastinal tumor. The correct diagnosis is suggested by the presence of air or the pooling of barium in the mass.

"Traction" diverticulum is rare, small, and usually completely asymptomatic. It occurs commonly in the hilar region when an inflamed node becomes adherent and subsequent esophageal motion pulls out a pocket.

CONGENITAL ATRESIA

Prompt diagnosis of congenital esophageal anomaly in newborn infants is essential, for the chance of survival drops rapidly after 24 to 48 hours. Atresia, with or without fistulous connection to the trachea, is the only important possibility, and should be considered in any baby with coughing, choking, and cyanosis before the less urgent (but more publicized) circulatory anomalies are sought. The four types of atresia are represented in Figure 1. In each type the diversion of saliva and swallowed liquids from the esophagus results in tracheal aspiration and eventually bronchopneumonia; if the esophagus has a blind upper end the overflow has the same effect as when the esophagus empties into the trachea.

The diagnosis is, of course, made by x-ray, and often sufficient evidence can be derived from the air shadows in a single plain film. When uncertainty exists, it is a simple matter to pass a very small catheter into the esophagus and instill 1 or 2 cc. of Lipiodol® to outline the fistulous tract or blind pouch. Barium should never be used because it does not empty readily from the bronchi and usually leads to fatal pneumonia. The presence or absence of air in the intestine is important in establishing the type of fistula. A blind lower esophageal segment results in complete absence of intestinal air, whereas a fistula from the trachea to the lower esophagus is often associated with a large amount of bowel air which is forced into the stomach during crying.

Multiplicity of anomalies must be kept in mind also; Brown and Brown[1] reported associated anomalies in 8 of 21 cases of tracheo-esophageal fistula. Atresia of Type III (Figure 1), for example, can

readily be overlooked in the presence of coincident imperforate anus which might seem to be adequate cause for gas in the bowel and regurgitation.

HEMATEMESIS

The differential diagnosis of hematemesis deserves special mention in the discussion of esophageal disease. This distressing condition can lead to fatal exsanguination, and sometimes the only hope for survival lies in prompt surgical intervention. A successful outcome may depend on rapid and certain localization of the source of bleeding for the correct approach. It is important to rule out esophageal disease before undertaking emergency laparotomy for presumed gastric or duodenal hemorrhage. Hiatal hernia can cause massive hematemesis, as can carcinoma; but by far the most common cause of major bleeding in the esophagus is varicosity from portal hypertension. The latter diagnosis may be suggested from the history or from clinical signs of cirrhosis, but the presence of varices should nonetheless be proved. This can be done by x-ray studies in many cases, but a negative finding is not always reliable, particularly during hematemesis. Preoperative esophagoscopy is therefore recommended as a quicker, safer and far more certain method than manipulation on an x-ray table when operation is planned.

536 Mason Street.

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VA Abandons Hope of Collecting on "Exclusion Clauses"

VETERANS ADMINISTRATION apparently is convinced that hospital insurance plans cannot be forced to drop "exclusion clauses," provisions which relieve the insurer of liability for payment to VA hospitals. VA's position was stated in a letter by Vice Admiral Joel T. Boone, chief medical director, to Rep. Alvin M. Bentley (R., Mich.). Adm. Boone described various ways in which hospitalization policies were able to exclude payments to VA for non-service connected cases, and other factors that made it difficult for the agency to collect from insurers. He added:

"It is safe to say that most of the policies currently being written contain some of these or similar exclusion clauses. There is nothing illegal about this. The parties have a right to contract as they please. No state insurance commission, or other regulatory body, or governor, would have any legal authority to require such insurance companies to insure a risk they do not want to insure."

This announcement followed various unsuccessful attempts to force state officials to outlaw VA "exclusion clauses." Earlier VA had announced that it would make no further effort to collect on policies carrying such clauses.

—A.M.A. Washington Letter

Diseases and Deaths

A Statistical Survey of 40,130 Autopsies at the Los Angeles County General Hospital, 1918 to 1948

EMIL BOGEN, M.D., *Olive View*, and EDWARD M. BUTT, M.D., *Los Angeles*

{This is Part II of an article in two parts. Part I appeared in June 1953}

Part II

• The 215,468 diagnoses recorded in 40,130 autopsies on patients treated at the Los Angeles County General Hospital during the 30 years between 1918 and 1948 were reviewed and tabulated. The primary causes of death as determined by the pathologists in these cases were recorded and the incidence of death from each disease in relation to the number of cases in which each occurred was computed. The age, sex and race distribution of patients examined postmortem and the incidence and fatality rates from various pathological conditions changed greatly during the period, owing to many factors, among them changes in elements of the population served by the hospital, an increasing incidence of older patients, and medical triumph over some formerly formidable diseases.

No one knows better than a pathologist the fallibility of postmortem examination even when most diligently and expertly carried out. Functional changes may leave no traces and well established disease entities may exist without detectable pathologic alterations. Certain diseases may be recognized only by special techniques which are not applied in routine autopsy examinations. Microscopic section often leads to addition, deletion, or change in the gross anatomical diagnosis. Only too seldom are special histologic, chemical and bacteriologic methods used to confirm, refute, alter or supplement the findings of gross and microscopic autopsy examinations. Nevertheless, clinicians and pathologists agree that the findings at autopsy examinations give the most complete and reliable information available as to the presence of various pathologic conditions at the time of death, and thus furnish valuable information regarding the incidence and severity of different diseases.

Millions of autopsy examinations have been made all over the world since the time of Morgagni. Many reports based on them have been published, but most of them have been confined to certain particular conditions. There is a paucity of tabulations of the over-all frequency of all diagnoses made in large series of autopsies, and most of those that are available are based upon conditions in other countries, or in earlier years, before the development of modern medical science.

The monumental study of 3,000 autopsies in San Francisco between 1900 and 1923 by Ophuls[9] is the largest and best known investigation of this kind of material in this country. It is now more than a quarter of a century since that study was made and many changes in disease, as well as in the methods of study, have occurred in the interval. An analysis of a much larger and more recent series of autopsies at the Los Angeles County General Hospital therefore has been attempted.

Autopsies have been performed at the Los Angeles County General Hospital for over 60 years. Of the 1,168,139 patients admitted in the period 1918-1948 inclusive, 112,409 died in the hospital; and autopsy was done in 40,130 (36 per cent) of the cases in which death occurred. Full records of all those autopsies were available. There were, altogether, 782,900 deaths in the entire county during the same period. (The population meanwhile was increasing from less than one million to more than four million.) The decrease in the general mortality rates in this county, from more than 15 per hundred thousand in 1918 to less than 10 in 1948, was accompanied by a decrease in the ratio of hospital deaths to admissions annually, from over 12 per hundred to less than 9 per hundred in spite of the increasing average age both of the general population and of patients admitted to the hospital.

Although altogether about 20 per cent more patients were admitted and died at the hospital in the period 1918-1937 than in 1938-48, there were about 20 per cent more autopsies during the latter period. In the first decade of the 1918-1948 period, autopsy

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was done in less than 25 per cent of cases in which patients died in the hospital; in more recent years it was done in almost 50 per cent.

With the aid of grants from the Los Angeles County Tuberculosis and Health Association and the California Tuberculosis and Health Association, and the help of a score of volunteer workers, these autopsy records have been reviewed. All records were reexamined by a pathologist, and the diagnoses and the primary causes of death scrutinized and codified according to a special classification developed in 1930 by Evans and Brown[8] and their associates for use in tabulating and classifying autopsy diagnoses. A recent revision of this classification has been cross-indexed to the Standard Nomenclature of Diseases and Operations of the American Medical Association especially for use at the Los Angeles County General Hospital. For this study the data were also retabulated according to the sixth International List of Causes of Diseases and Death, adopted by the World Health Organization in 1948.

The 40,130 autopsies at the Los Angeles County General Hospital during the past 30 years were performed by a large number of persons, which gives objectivity to the statistical results. Numerous papers have been published on selected groups of patients and on particular conditions found at autopsy at the Los Angeles County General Hospital. Many of these are bound in the collected publications of the pathology department in the Los Angeles County General Hospital Library. A study by Swartout and Webster[10] comparing antemortem and postmortem diagnoses in 8,000 cases from 1933 to 1937 showed the variable frequency with which errors of excess and omission occurred in different conditions. Bullock and Edmondson[5] described 22 cases of pancreatic lithiasis found in 35,000 autopsies, in 1948. Extensive studies of intracranial pathologic changes by Courville[7] and of pulmonary cancer by Steiner[11] were also based on this material. Various special studies,[1, 2, 3, 4] especially with regard to the tuberculous lesions found in this review, have already been published, and a number of others are now under way.

The records of the 40,130 postmortem examinations performed at the Los Angeles County General Hospital between 1918 and 1948 reflect great changes that occurred during that 30-year period. Data on age, sex and race distribution changed in accord with changes in the character of the growing population of the county and changes in factors with regard to the kinds of patients admitted to the Los Angeles County General Hospital. Autopsies were done in a higher proportion of cases on some of the services than on others and in some groups of patients than in others. Therefore the data are not representative of a cross-section of all deaths from all causes in all groups in the hospital.

Throughout the period there were approximately 50 per cent more postmortem examinations of males than of females. Nearly as many women as men were admitted to the hospital but fewer of the women died there, especially in the large number admitted for complications of pregnancy and for delivery.

One-half of the autopsies were done on subjects more than 50 years of age. A generation ago the median age was 40 years; now, half of the patients examined postmortem are over 55 years of age. In 1918 less than one-tenth of autopsies were done on patients more than 70 years of age; in 1948 more than 25 per cent were on subjects in that age bracket. This is owing to a change in the age distribution of the general population and to the lowered fatality rates in the younger patients.

Autopsies have been relatively more frequent among white than among non-white patients. Altogether, more than three-quarters of all the autopsies in this series were done on white subjects, about 15 per cent on Mexicans and about 7 per cent on Negroes. The proportion of Negroes nearly doubled during the period, while the proportion of Mexicans decreased. The exact percentage of autopsies in different age, race and sex groups is not now available. Apparently permission for autopsy is harder to get for females than for males, for old persons than for young, and for Negro than for white patients.

Since a complete cataloguing of all deviations from normal in a single autopsy might constitute a volume in itself, usually only the most obvious or important conditions are noted. The frequency with which certain diagnoses are recorded may vary with the clinical interest in them, pathological connotation and with passing medical fancy. The difference between the recorded frequency and the actual occurrence of different conditions should be borne in mind. Nevertheless, the incidence of each diagnosis in the multiplicity of diagnoses recorded in the autopsies at the Los Angeles County General Hospital and the frequency with which it was deemed to be the primary cause of death, generally reflects its real importance as a cause of disability and death.

Altogether 215,468 different diagnoses were recorded in the 40,130 autopsies. The average number of diagnoses per autopsy increased from less than four in the first half of this series to six during the last decade of the period reviewed. The more complete recording of the findings probably reflects the growing influence of the medical schools in Los Angeles as well as the higher incidence of older patients, with more pathologic conditions in each, in the later period.

The most frequent single diagnoses recorded were bronchopneumonia, hypertensive cardiac hypertrophy and atherosclerosis, but this may be misleading as to the actual frequency of the various conditions. Many common conditions, such as acute pharyngitis and acute rhinitis or the common cold, were rarely recorded, while there were nearly 500 cases of pancreatitis and 139 cases of polycystic kidney. The most frequent single causes of death listed were pulmonary tuberculosis (2,527 cases), hypertensive cardiac hypertrophy (1,411 cases), and bronchopneumonia (1,267 cases).

The frequency with which a particular condition is recorded as the primary cause of death in all autopsies in which that condition is observed, including cases in which it was a contributing factor or even an unrelated associated condition, indicates what may be referred to as the case fatality ratio —that is, the number of fatal cases in relation to the total number of cases. This approximates the true case fatality rate only with regard to those conditions that are readily recognized at autopsy when not in themselves the cause of death. Certain diseases such as severe pulmonary edema were rarely recorded as the primary cause of death although they frequently were the terminal event. Chronic pleuritis was recorded 1,500 times but in only five instances was it considered a primary cause of death. Diabetes was recorded in 912 autopsy reports, chiefly on the basis of clinical diagnosis, and in one-third of the cases in which it was noted it was given as the primary cause of death.

Using the ten broader groupings of the Lesion Index of the Los Angeles County General Hospital, the most common sites of pathologic changes noted in the 215,468 different diagnoses were the circulatory, the respiratory and the alimentary systems, while the most common etiologic classes were the degenerative conditions, acute infections and chronic infections, in that order. The most common sites of conditions listed as the primary cause of death were the respiratory, the circulatory and the alimentary systems, while the most common causes were the degenerative conditions, acute infections and chronic infections (see Table 1).

About one-tenth of all autopsy diagnoses including more than a quarter of the primary causes of death, had been cross-indexed into general categories, among which cardiorenal disease (8,847, of which 5,890 were fatal), malignant disease (6,233, with 5,730 fatal), and tuberculosis (6,085 with 3,635 fatal) were by far the most frequent.

The relative frequency of different diagnoses varies with the fineness of the classification used. Thus a disease which may occur in many sites, as cancer or tuberculosis, may be divided up into a large number of diagnoses if classified according to location, and its true incidence thus lost. The 3,208 cases of pulmonary tuberculosis, with 2,527 in which this was given as the primary cause of death, constitute only a part of the incidence of tuberculous disease. There were actually 15,378 different diagnoses of more than a hundred different kinds of tuberculous lesions found in 6,085 autopsies, in 3,635 of which tuberculosis was recorded as the primary cause of death. On the other hand, excessive grouping may obscure the importance of distinct entities. The Lesion Index in the pathological department of the Los Angeles County General Hospital or the Stan-

TABLE 1.—*Sites and causes of lesions diagnosed in 40,130 autopsies*

Anatomical Location	Total	Fatal
Skin and bones	5,730	1,250
Nervous system	12,481	4,380
Circulatory system	46,451	7,497
Respiratory system	45,729	8,920
Alimentary system	39,988	6,992
Hematopoietic system	11,012	906
Genito-urinary system	32,676	4,039
Endocrine system	3,462	791
General	17,939	5,355
Totals	215,468	40,130
Etiologic Factors	Total	Fatal
Congenital	4,269	875
Acute infection	50,566	8,934
Chronic infection	23,392	6,186
Degeneration	94,521	13,255
Neoplasms, benign	7,990	2,217
Neoplasms, primary	3,942	3,288
Neoplasms, metastatic	12,386	841
Trauma	5,662	2,660
Miscellaneous	12,740	1,874
Totals	215,468	40,130

TABLE 2.—*Autopsy diagnoses compiled according to the broad sections of the International Statistical Classification of Diseases, Injuries and Causes of Death*

	Section	Number of Classes of L.A.C.G.H. Lesion Code	Number of Diagnoses	Primary Causes of Death
I.	Infections	275	21,250	6,251
II.	Neoplasms	1,187	21,449	6,102
III.	Metabolic	119	5,003	997
IV.	Blood	101	6,314	324
V.	Mental	4	1,056	254
VI.	Nervous system	186	11,052	3,829
VII.	Circulation	258	45,545	5,644
VIII.	Respiration	208	27,782	3,718
IX.	Digestion	399	24,887	3,865
X.	Genito-urinary	314	17,136	1,756
XI.	Pregnancy	41	2,199	352
XII.	Skin	79	1,234	224
XIII.	Bones	103	943	155
XIV.	Congenital	232	9,216	1,986
XV.	Infancy	18	6,354	2,553
XVI.	Ill-defined	157	8,801	1,594
XVII.	Violence	262	5,247	526
	Total		215,468	40,130

dard Nomenclature of Diseases and Operations of the American Medical Association are excellent for locating specific individual conditions, but for comparing and analyzing the relative incidence of different types of diagnoses a classification such as that of the International List of Diseases and Deaths may prove advantageous.

In the 17 chief divisions of the International List of Causes of Diseases and Death, the most frequent diagnoses were of circulatory system diseases, followed by respiratory and digestive diseases, malignant disease and infections. By the same groupings, the most common causes of death were infections, neoplasms and circulatory disease (about 15 per cent each) and diseases of the digestive, nervous and respiratory systems (about 10 per cent each). (See Table 2.)

Using the more detailed classification of the International List, the most frequent diagnoses were arteriosclerotic heart disease, bronchopneumonia, general arteriosclerosis, and congenital malformations (Table 3). The more important causes of death were pulmonary tuberculosis, arteriosclerosis, congenital malformation, and bronchopneumonia (Table 4).

Changes in the incidence of different diseases during the period reviewed reflect differences in the demographic compositions of the population served as well as differences in pathologic agents and medical control measures. To the greater proportion of older persons in the population may be ascribed the decrease of those diseases common among persons in the younger ages and the increase in the incidence of conditions that beset older people. In addition, however, the data were affected by the decrease in deaths from certain conditions, notably typhoid fever, scarlet fever and appendicitis, which have diminished strikingly chiefly as a result of medical advances. Some of the increases in malignant disease, poliomyelitis, diabetes and arthritis may not be so readily explained.

The relative changes in the hospital fatality rates show effects of medical progress even better than do the changes in total incidence of the various diseases. The decrease in hospital fatalities from tuberculosis, syphilis, benign neoplasms, diabetes, gastric ulcer, appendicitis, intestinal obstruction, enteritis, nephritis, and pregnancy conditions may be ascribed in great measure to improvement in medical care.

Box 500, Olive View.

TABLE 3.—*The ten most frequent diagnoses in 40,130 autopsies*

International Code No.	Diagnoses	Number of Classes in Lesion Code	Total	Primary Cause of Death
420	Arteriosclerotic heart disease	25	12,712	2,273
491	Bronchopneumonia	2	12,096	1,269
450	General arteriosclerosis	3	7,105	645
754	Congenital malfunction (circulatory)	57	6,712	1,637
795	Ill-defined causes	94	5,030	311
519	Pleurisy	26	4,965	42
446	Hypertensive arterial nephrotic, non-heart	4	4,578	448
422	Other myocardial degeneration	14	4,173	194
002	Tuberculosis, pulmonary	3	3,924	2,678
298	Disease of spleen	31	3,763	18
	Subtotal		65,058	9,515

TABLE 4.—*The ten chief causes of death in 40,130 autopsies in relation to number of times each was diagnosed*

International Code No.	Diagnoses	Number of Classes in Lesion Code	Total	Primary Cause of Death
002	Tuberculosis, pulmonary	3	3,924	2,678
420	Arteriosclerotic heart disease	25	12,712	2,273
754	Congenital malfunction (circulatory)	57	6,712	1,637
491	Bronchopneumonia	2	12,096	1,269
331	Cerebral hemorrhage	24	2,666	1,216
332	Cerebral embolism and thrombosis	5	3,691	1,206
776	Immaturity	1	1,843	1,090
581	Cirrhosis of liver	6	2,707	778
151	Malignant neoplasm of stomach	16	910	746
761	Birth injury	2	1,133	712
	Subtotal		48,394	13,605
	Total		215,468	40,130

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Injuries of the Musculotendinous Cuff Of the Shoulder

DONALD W. BLANCHE, M.D., *Los Angeles*

• *Injuries of the musculotendinous cuff are frequent and often cause long periods of disability.*

The cuff is subject to progressive degenerative changes which are visible microscopically in most persons past 30 years of age, and visible grossly in those past 40. The cuff ruptures through areas of degeneration.

A great majority of patients recover good shoulder function under conservative treatment.

Operation is not urgent. Accurate diagnosis of a complete tear of the cuff cannot be made until the acute phase of injury has passed, and delay in operating does not decrease chances of good results.

INJURY OF THE musculotendinous cuff of the shoulder is relatively common and although it may seem to be of minor order it may cause many months of disability in a person whose livelihood depends on active use of the shoulder.

ANATOMY

The shoulder joint, whose semispherical humeral head articulates with a small shallow glenoid cavity, has a wide range of motion for dextrous use of the upper extremity. In phylogenetic change from a weight-bearing to a prehensile limb, the shoulder joint has sacrificed stability and strength for mobility. The joint capsule is lax, to allow freedom of motion. The capsule is attached to the periphery of the glenoid cavity of the scapula and to the anatomical neck of the humerus. It is strengthened by ligamentous bands and by tendons of the four short rotator muscles. These muscles arise from the body of the scapula and terminate in flat tendons that blend indistinguishably with the capsule and with each other, forming a structure which has been aptly named *musculotendinous cuff*. The supraspinatus tendon reinforces the capsule superiorly, the subscapularis anteriorly, the infraspinatus and teres minor posteriorly. The acromion process of the scapula and the coraco-acromial ligament form a protective roof over the shoulder joint. Beneath the acromial arch and the upper portion of the deltoid muscle lies the subacromial (subdeltoid) bursa, which affords a gliding mechanism for the musculotendinous cuff as it slides up under the acromion on abduction of the arm. Thus, the floor of the bursa is the musculotendinous cuff and the roof is the undersurface of the deltoid muscle and acromion process. Reaction of the bursa, therefore, commonly accompanies trauma or disease of the adjacent capsule or tendons.

Function of the component parts of the shoulder has been clearly described by Inman, Saunders and Abbott.[5] Elevation of the arm results from the combined action of the deltoid and short rotator muscles throughout the entire range of motion which occurs partially at the glenohumeral joint and partially by rotation of the scapula. After an initial "setting-phase" the ratio of excursion of the glenohumeral to scapulothoracic motion is as two to one, thus producing what Codman[3] described as "scapulohumeral rhythm." All the rotator muscles acting together stabilize the humeral head against the glenoid cavity. Abducting force is exerted by the superior portion of the cuff. The degree of rotation of the arm at any given moment determines which of the rotator muscles is in the superior position and therefore exerting this force. The force is most frequently, but by no means exclusively, exerted by the supraspinatus muscle. Tearing of one tendon may readily be compensated for by rotating the arm so that an intact portion of the cuff is superior. Thus, a rather extensive rupture of the cuff may be present in a shoulder in which there seems to be no loss of abductor power.

PATHOLOGY

The musculotendinous cuff is subject to progressive degeneration, which is considered to be a physiological aging process accentuated by chronic strain, overuse or repeated minor trauma. In the supraspinatus and subscapularis tendons, which are subject to more strain, more pronounced changes occur. Microscopically visible fraying, hy-

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alinization and fibrosis are present in most persons after age 30, and are visible grossly in those past 40 years of age. These changes become more pronounced with increasing age and cause weakening of the tendinous cuff. A normal tendon will seldom, if ever, rupture and the fact that a tendon has ruptured is indicative of a degenerative process. Wilson and Duff[9] reported on the pathologic changes of short rotator tendons of the shoulders in a study of 125 cadavers. They noted complete rupture in 22 per cent of subjects over 30 years of age and an increasing incidence in older age groups.

A rupture of the musculotendinous cuff may be classified as "incomplete" when it does not extend through the thickness of the tendon. That occurring on the joint surface was termed by Codman "rimrent." The tear may be on the bursal side or may occur within the substance of the tendon and not be visible from either surface. A "complete" tear extends through the entire thickness of the tendon, opening free communication from joint to bursa. Tears vary in size and site. The most common lesion is initially a transverse tear with subsequent longitudinal split. This enlarges with ensuing strain or reinjury and separates anteroposteriorly, due to divergent muscle pull. In all tears of the cuff, the essential feature is that tearing occurs through an area weakened by a degenerative process.

SYMPTOMS

Most patients with an acute injury of the shoulder cuff are past 40 years of age—that is, the injury usually occurs after degenerative changes that weaken the cuff and predispose to tearing have taken place. Injury is more common in laborers owing to their exposure to repeated strain which augments degenerative lesions and to acute trauma which precipitates the tear. Injury may be incurred as in a fall on the outstretched arm, or perhaps sudden abductor movement of the shoulder strains the cuff beyond its functional limit, rupture resulting. There is a feeling of something tearing or giving way, associated with acute pain which increases in severity for the first four to seven days, then decreases. The patient is unable to actively raise the arm or to maintain it in abduction. This limitation may be owing either to extensive rupture of the tendon or to protective muscle spasm and reflex muscle inhibition. There is ache in the shoulder, often referred to the point of deltoid insertion or down the arm, and localized tenderness over the site of the cuff lesion. In less severe cases, with preservation of abductor power, there may be a painful jog as the arm is abducted past the horizontal, owing to impingement of the cuff against the acromion.

CONSERVATIVE TREATMENT

During the acute phase, it is impossible to evaluate the degree of actual injury to the cuff, and definite diagnosis cannot be made for from two to four weeks. Conservative treatment is therefore indicated initially in all cases. Radiant heat and gentle massage are comforting and allay spasm. In some instances, local injection of procaine may be indicated to give temporary relief. The abduction or "airplane splint" is uncomfortable and ineffectual. Since the scapula rotates freely, especially when the shoulder muscles are in spasm, and the humerus remains in a position of adduction in relation to the scapula, even though the arm be elevated on a splint, splinting neither relieves strain on the cuff nor prevents contracture. The arm should be supported in a sling but complete immobilization is undesirable as it increases discomfort and causes stiffness. Every two or three hours the arm should be removed from the sling for gentle motion (Figure 1). In the initial exercise of "relaxed circumduction" the patient leans well forward and supports himself with the uninjured hand on a chair; then the injured extremity, hanging free, is swung slowly in circles for several minutes (Figure 1, A). As the acute phase begins to subside, more activity is indicated. In the wall climbing exercise (Figure 1, B) the patient stands with his side to the wall, places the tips of the fingers on the injured side against the wall and then moves the fingers in a "walking" motion up the wall to ever higher goals to stretch the shoulder into abduction. Exercises with the use of a staff (Figure 1, C) are valuable, particularly in restoring external rotation. The use of a rope through an overhead pulley (Figure 1, D) is another method of obtaining active exercise and passive stretching of the shoulder in abduction and external rotation with the good arm assisting the injured one.

Some forcing of motion is essential to prevent permanent stiffness of the shoulder, especially as most of the injuries occur in older persons with degenerative capsular lesions. Yet, if motion is forced too vigorously, it will cause increasing pain and muscle spasm, thereby defeating the purpose. The guiding rule is not to force activity beyond the point of mild discomfort. As improvement is made the sling may be left off for longer periods and more vigorous exercise permitted.

The shoulder stiffness that is present soon after injury is owing to muscle spasm, and motion increases as spasm subsides. However, after several weeks of inactivity, adhesions develop. In this stage, passive stretching is indicated. Here again, a nice balance must be reached between ineffectual motion and stretching so vigorous that pain and spasm are increased. Positive stretching should be done by a

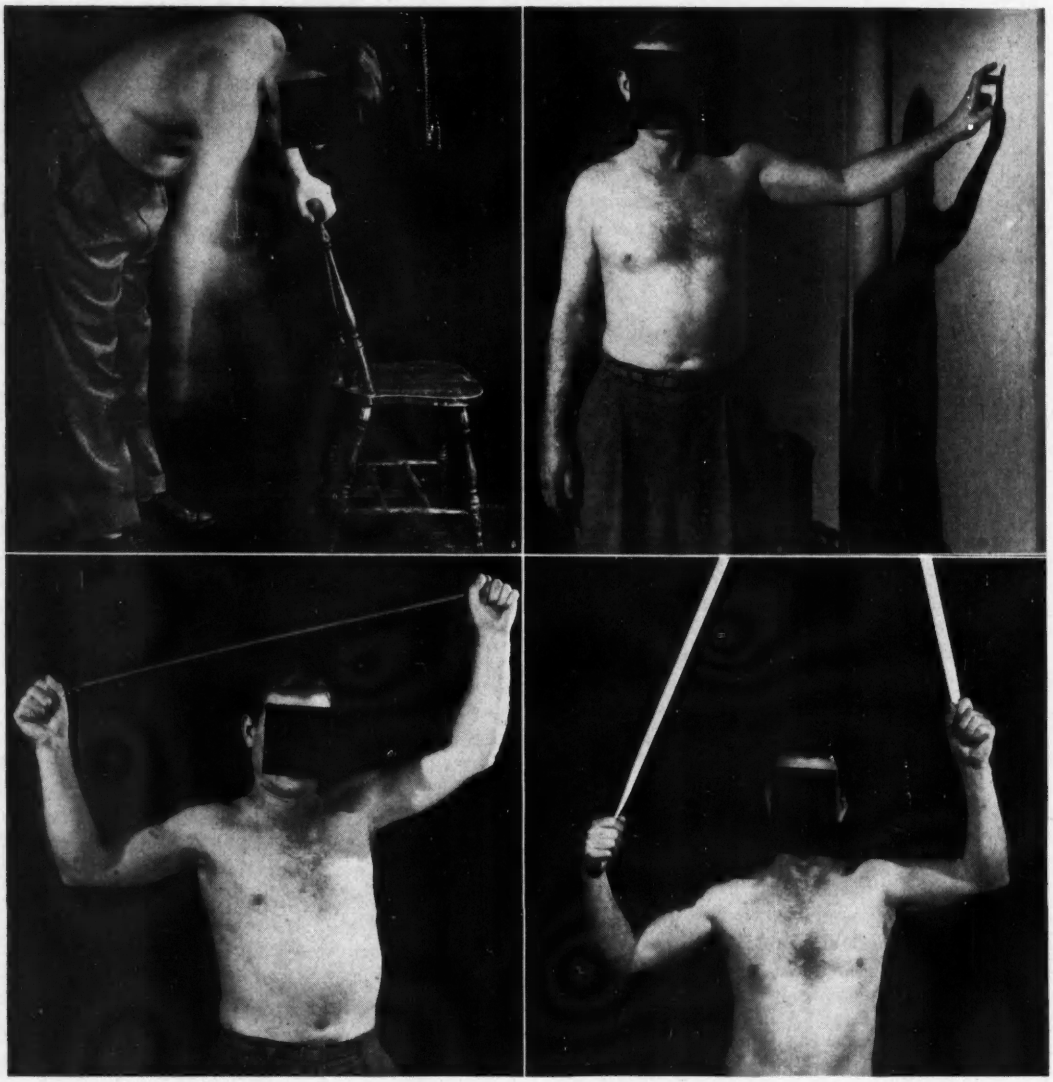

Figure 1.—*Upper left:* "Relaxed circumduction." This is the initial exercise. The affected extremity hangs free, and is slowly swung in circles for several minutes. *Upper right:* "Wall-climbing exercise." The fingers of the affected extremity creep up the wall to an ever higher goal, stretching the shoulder into abduction. *Lower left:* Exercise with a staff, particularly valuable in restoring external rotation. *Lower right:* Exercise with rope through an overhead pulley affords active exercise and passive stretching. The good arm assists the affected one.

physical therapist under the direction of a physician, and the amount of force used should be dictated by the patient's response. Adequate stretching will cause the shoulder to hurt at the time, but not to ache afterward. Stretching under anesthesia is thoroughly condemned, for without the sensation of pain as a guide the shoulder is frequently harmed rather than helped by the procedure which may cause further tearing of the capsule, hemorrhage, edema, spasm and pain.

When the acute phase has subsided, it becomes possible to determine the condition of the cuff by the functional tests of active shoulder abduction and by the patient's ability to maintain abduction after the arm has been passively elevated by the examiner, the latter being the more informative test. Pain without demonstrable weakness when strain is thus imposed on the cuff suggests a small or an incomplete rupture. If the patient is unable to maintain the arm in abduction, extensive rupture is indicated. Complete

loss of function indicates that there has been massive avulsion of the entire cuff.

In a large majority of instances, there is a gradual return of active abductor power and decrease in pain. In that case, only conservative treatment is necessary. Operation should not be considered as long as satisfactory progress is being made under conservative treatment (as long as eight to ten weeks). Small tears heal without loss of function, and even larger ones may not cause so much restriction of motion that the patient is seriously handicapped. Age and station in life must also be considered: An elderly or retired man may accept considerable permanent loss of function, whereas a younger working man who has pronounced weakness of abduction and is not improving should have the benefit of surgical repair. An example of adaptation to partial disability is illustrated in Figure 2. A man, aged 70, fell while going upstairs, threw out his right arm to protect himself and felt sudden sharp pain in his shoulder, associated with loss of ability to elevate the arm. When the patient was reexamined six years later, it was noted that he had subconsciously learned to externally rotate the arm when elevating it and was not aware that he had lost much abductor power, although obviously there was extensive tear of the cuff.

Figure 2.—*Left:* Typical appearance of a patient with a large complete tear of the superior (supraspinatus) portion of the cuff. This picture, taken six years after injury, shows maximum degree of active abduction as the arm is raised from the side in a position of neutral rotation. *Right:* This picture, taken on the same day, shows the greater range of active abduction the patient obtained by raising the arm in complete external rotation. In this position an intact (subscapularis) portion of the cuff was in the superior position. The patient had acquired this maneuver subconsciously and was not aware that he had lost much abductor power.

SURGICAL TREATMENT

McLaughlin[7] and DePalma[4] both observed that the results of operation done long after injury are as good as those obtained by operating early. They noted also that if repair is adequate the size of the tear does not materially affect the end result. Therefore, an adequate trial of conservative treatment should be given and operation decided upon only if the condition seems static and if there is so much persistent pain and disability that the patient desires operative exploration.

A simple deltoid splitting incision is inadequate for cuff repair and it endangers the circumflex nerve which runs forward transversely through the muscle. The anterior exposure through the deltoid-pectoral junction augmented by partial reflexion of the deltoid origin gives adequate visualization for most procedures in the shoulder, although the acromion process partially obscures the cuff. McLaughlin's modification of the saber-cut incision affords the best view of this region. In this procedure the skin incision crosses the shoulder in the suspender line, just lateral to the acromial clavicular joint and extends forward 3 to 5 centimeters. For preliminary exploration, the anterior end is developed first. The deltoid muscle is exposed and the fibers split not more than 4 centimeters. This is done in the anterior portion of the muscle so that if any nerve fibers are cut there will be minimal muscle atrophy. The cuff may then be inspected by rotating the arm, and minor procedures can be carried out without further exposure. More extensive exposure is necessary, however, for most cuff repairs; and it is accomplished by extending the skin incision backward to the posterior deltoid muscle. The acromion process is exposed and osteotomy between the acromial-clavicular joint and the tip of the acromion carried out. The amount of bone excised depends on the exposure needed. The excised portion of the acromion may be discarded and its removal obviates impingement of the repaired cuff against the acromion. If the interior of the joint is to be inspected, the capsule is split longitudinally, preferably in the interval between the supraspinatus and subscapularis tendons.

Ordinarily, surgical treatment is not necessary in cases of incomplete tearing. Sometimes, however, persistent pain caused by mechanical impingement of the lesion against the acromial arch may dictate operation. Alleviation can be accomplished by partial removal of the acromion process and repair of the capsular lesion. Usually the capsular lesion can be excised and the defect closed by direct suture.

Occasionally it is possible to carry out direct suture of a simple split in the cuff, but in most cases a plastic repair is necessary. A common error is to try to close an elliptical defect by abducting the arm and attempting a direct end-to-end suture. This is doomed because it violates surgical principles and ignores the basic pathologic factors of the lesion.

In planning surgical repair, three principles must be remembered. First, the tear is through an area of degeneration of the tendon which must be excised back to healthy tissue. Second, the lesion is a combination of transverse and longitudinal tear which spreads by muscle pull. Third, tissue must not be sutured under tension. In McLaughlin's method of repair, a continuous silk suture is used in a shoelace manner to close the defect from side to side as much as possible without tension. Then the distal end is reinserted into the humeral head only as far distally as it will reach without tension with the arm at the side. An area of exposed cartilage of the humeral head is removed and the edge of the cuff is attached to the bone by passing silk sutures through drill holes.

Postoperative care should be under the direct supervision of the operating surgeon, as only he knows the pathological condition of the torn cuff and the strength of the surgical repair. Until the wound is healed, balanced suspension traction affords adequate protection and permits gentle active exercise. Then all immobilization except a sling is discontinued and the patient put on a course of graduated exercises (beginning with relaxed circumduction, then "finger walking" up a wall and the like, as previously described) and is encouraged to use the arm for light activities. Active abduction against gravity is not permitted for about a month, or until the surgeon believes that the tendon has firmly reunited.

2010 Wilshire Boulevard.

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Medical Textbooks for South Korea

PHYSICIANS ARE INVITED to send their surplus medical textbooks and medical journals to Korea for utilization of South Korean medical schools and hospitals. Mail shipments, express collect, to: Alameda Medical Depot, 2155 Webster Street, Alameda, Calif. Each shipment should be clearly marked "Kormeded."

—*A.M.A. Secretary's Letter*

Biological Warfare

JOHN BEESTON, M.B., D.P.H., *Los Angeles*

The use of biological agents as controlled weapons of war is practical although uncertain. Three types of agents are feasible, including pathogenic organisms and biological pests, toxins, and synthetic hormones regulating plant growth. These agents may be chosen for selective effects varying from prolonged incipient illness to death of plants, man and domestic animals.

For specific preventive and control measures required to combat these situations, there must be careful and detailed planning. The nucleus of such a program is available within the existing framework of public health activities. Additional research and expansion of established activities in time of attack are necessary parts of biological warfare defense.

THE TERM "biological warfare" is a relatively new one in the vocabulary of the military sciences. The subject matter, however, is by no means new. The term "germ warfare" has been in use for several decades and is still used by some people in dealing with this subject. The more inclusive term "biological warfare" is desirable since it covers disease agents other than living forms. The earliest definitions included only living agents which, when disseminated among an enemy, would interfere with his capacity to resist. These agents might include several types of insects such as the Japanese beetle, the Mediterranean fruit fly, and the European corn borer, which might produce famine by the destruction of crops. The other method would be to introduce, directly, the specific etiological agents of diseases known to be pathogenic to man, the domestic animals, or edible plants. Recently the concept of biological warfare has been expanded to include, in addition, the toxins produced by certain pathogens. Still more recently, the effect of certain synthetic hormones that control the growth and fruit-bearing functions of most plants have been studied. As a result, certain hormones have been developed which can interfere with the production of normal crops and vegetables.

The current concept, therefore, of biological warfare includes three major groups. First, the living factors—either insect pests or pathogenic organisms; secondly, the toxins from certain specific pathogens; and thirdly, synthetic hormones. It will be seen that this latter category of synthetic hormones forms a bridge between biological warfare and chemical warfare, which is more usually concerned with poison gases and similar agents.

The role of biological warfare, as a controlled weapon of war, is still uncertain, since large-scale use of various agents has not been tried up to the present. Consequently in the minds of many people there is much misunderstanding of the possibilities and potentialities of this type of weapon. On the one hand, alarmist reports have appeared in some sections of the press exaggerating the magnitude of the situation. On the other hand, excessive complacency on the part of some professional personnel has suggested that this type of attack is either impossible or ineffectual. As usual, the truth lies somewhere between.

The author is assistant professor in Public Health and Acting Director of Disaster Preparedness, University of California at Los Angeles.

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HISTORICAL BACKGROUND

History contains many examples of the effectiveness of biological agents in defeating armies. On the plains of Thessaly, epidemics killed nearly two-fifths of Xerxes' 800,000 troops. Plague and typhus slaughtered the Crusaders at the gates of Antioch and Jerusalem. Typhus liberated Granada from the Moors. Typhus and dysentery decimated Napoleon's grand army in Russia.[6] These epidemics were natural in origin, and the populations at risk had little or no preventive measures. Even without the latter, a considerable time factor is involved in the spread of epidemic disease on this vast scale. Perhaps the earliest deliberate attempts to spread disease among the enemy was the practice sometimes used in the Middle Ages of dropping plague-ridden corpses into the village wells.

During World War I, German secret agents in the United States infected livestock about to be shipped to the Allied Nations of Europe with glanders.[7] Although these attacks were crude, they indicated the possibility of using this weapon in the form of sabotage. During World War II the possibility of widespread dissemination of disease organisms was recognized. In order to provide the proper

defense mechanisms against this form of attack, it was necessary to have some fundamental knowledge. This could only be obtained by an extensive research program. Accordingly in the summer of 1942, the War Research Service was organized as part of the Federal Security Agency.

The research program was concentrated under the command of the Army's Chemical War Service, now called the Chemical Corps, and established at Camp Detrick, near Frederick, Md. In addition, the U. S. Navy established a center of operations at the University of California in Berkeley. As a result of this concentrated research during the war years, much information was obtained on the most effective biological agents to be used and the methods to distribute them. At the same time, research was concentrated on providing satisfactory defense measures to be used against these same agents. Although much of this vital research remains top military secret, George W. Merck, the drug manufacturer who served as the War Department's consultant on biological warfare, was able to reveal that "only the rapid ending of the war prevented field trials, in an active theater, of synthetic agents which would, without injury to human or animal life, affect the growing crops and make them useless."[6] With this state of knowledge available at the end of World War II, it seems almost certain that if World War III should come, some form of biological warfare must be expected.

GENERAL PRINCIPLES OF BIOLOGICAL WARFARE

There are several tactical uses of biological agents. The underlying endeavor of an enemy would be to destroy the power of an attacked nation to resist. The biological attack might therefore be directly on the military personnel involved in offensive or defensive action or, by concentrating on the civilian population, it might defeat the chain of production of war supplies that maintains the armed forces. There are several methods and degrees by which these tactics might be carried out. Biological agents might be used to kill outright, or to cause death after lingering illness, or merely to make people sick and indisposed.

By using a non-epidemic disease, the impact of an attack might be localized, whereas by using a self-propagating epidemic disease, a widespread pandemic could be created. By using agents against plants and animals, the food supplies of the defenders could be seriously depleted.

Whatever method might be used, the gross overloading of medical personnel, facilities and supplies, to say nothing of lowering of national morale, could be a serious matter.

Certain biological agents, because of their historical significance in decimating populations, will readily suggest themselves as the most deadly for purposes of attack. It must be remembered that there are fundamental differences between the dissemination of certain diseases by natural methods and the artificial spread of these agents. Diseases that normally require a vector for their propagation may be spread in deadly form by artificial means. In these circumstances, the control of the infections by breaking the normal chain of spread, such as vector control, will be quite useless. Also, it must be remembered that other effective control measures that will normally eliminate a natural epidemic may not be adequate when it comes to dealing with an artificial attack.

Biological agents used for warfare purposes will be selected for the highest virulence, the most unlikely serological types, and from groups for which vaccines are unavailable or ineffectual. In addition, much higher concentrations of the infective agent can be created than ever occur in nature.

From the consideration of these properties alone, a ready selection of diseases comes to mind. The type of infectious agent to be used would depend on the aim to be achieved. If the aim was to kill large numbers of people, plague, typhus, cholera, smallpox, influenza, tularemia, melioidosis, and botulism toxin would be suitable agents. If prolonged sickness rather than death was the aim, then several diseases—among which perhaps undulant fever is the best—might be used. The attack against domestic animals would most likely include the viruses of rinderpest, hog cholera, fowl pest, and hoof and mouth disease. The attack against plants would include several fungi, among them wheat stem rust, corn smut, potato late blight and the bacteria of bean blight, as well as the synthetic plant hormones previously mentioned.[5]

In order to confuse diagnosis, it is not unlikely that more than one disease agent would be used at the same time so that several different epidemics might occur among man and the domestic animals and plants.

METHODS OF ATTACK

The methods of attack would depend upon the effect desired. All normal known methods of dissemination of disease agents might be used. If specific acts of sabotage were attempted, local contamination of food or water supplies to a critical group of the population such as people in the vicinity of a tool-making factory might be used. For widespread dissemination aerosol sprays would seem to be the most effective type of distribution, since the extremely small size of the droplets would permit them to enter the alveoli of the lung.[8] Respiratory diseases spread naturally by droplets, spread much more slowly since the droplets are larger in size

and are either filtered out by the upper respiratory tract or diverted to the stomach by the ciliary action of the bronchial tree. Much larger doses of pathogenic organisms are required to produce infection by way of the stomach than by way of the alveoli of the lungs.

The aerosol clouds could be produced by several types of military weapons. Sprays from low-flying hostile aircraft would provide widespread distribution of infective agents. Similarly ships or submarines might make use of prevailing winds to spread clouds of aerosols over coastal areas. Guided missiles, various type of artillery shells, large and small bombs comparable with incendiary bombs, are also possible means of spreading aerosols.

The success of the measures would, to some extent, depend upon climatic and meteorological factors which cannot always be accurately foreseen, still less controlled. In general, the same meteorological conditions that make smog a serious problem can likewise increase the dangers from a biological warfare airborne attack. The significance, therefore, of this problem in Southern California, is important.

Perhaps the biological agent most likely to be used by the aerosol method on a large scale would be the bacillus of plague. Spread in this way, pneumonic plague would be the result. This form of the disease is highly fatal and contagious, and therefore self-propagating. However, newer vaccines and some of the latest antibiotics have shown encouraging results in treatment, provided this can be applied quickly.

The public fear of botulism is well known, and this most poisonous of all toxins could be distributed in local water reservoirs by enemy planes, or in specified food supplies by saboteurs. The toxin has been isolated and crystallized in pure form in which it has a potency of 30,000,000 minimum lethal mouse-doses per milligram. A more dramatic way of stating this is to say that one ounce of crystalline botulinus toxin injected into the skin has a theoretical potency sufficient to kill 900 billion mice. It has been calculated that 900 billion mice are equivalent to 180 million human beings.[6] In terms of newspaper headlines this might suggest that one ounce of toxin would be more than enough to kill the whole population of the United States. Fortunately there is a wide gap between the theoretical concepts of the laboratory and the tactical application of such a devastating weapon.

DEFENSE MEASURES

From all that has been said, it would seem at first that the potential outlook is a gloomy one. As with all weapons, the effectiveness of biological warfare depends on the extent and degree of defensive preparations. The federal, state and local public health and related services are a permanent defense force waging war on the natural attackers of man. The effectiveness of attack would depend therefore on the effective organization and maintenance of this permanent defense force.[1, 2] During times of potential biological warfare threat, it would be necessary to increase the size and vigilance of these peace-time defenders.

It must be remembered that the normal public health machinery would be most effective in preventing secondary cases after the initial attack of the disease had been delivered, by the use of isolation quarantine, immunization and treatment. To make these measures most effective, special epidemiological teams would be needed to facilitate rapid diagnosis so that the appropriate measures could be speedily applied. Special teams of medical officers are being recruited and trained to act as epidemic intelligence officers for this purpose.[4]

Other preventive measures will include plans to prevent and intercept enemy attacks and sabotage. After the attack, the exposure to harmful aerosols may be minimized by the individuals remaining indoors with windows and doors closed.[3] Air-tight shelters would be the most effective group protection, but these would need specially-designed filters in the air vents to prevent the ingress of pathogenic agents.

Protective clothes and gas masks similar to those used for combating poison gases have been shown to be effective protection for those who have to be exposed immediately after the attack. This kind of clothing, however, is impracticable for anything but short periods of work.

The detection of the attack and the identification of the type of agent used is of fundamental importance so that effective control measures may be applied as soon as possible. This in itself may be a difficult task, depending on the method of attack and the type of biological agent used. Preparations must be made so that insidious outbreaks of disease can be rapidly investigated by teams of epidemiologists. To make this possible, newer methods of sampling air at regular intervals have been devised. Similar techniques have been developed for speeding up the bacteriological examination of water samples, by using special filter papers that can be incubated in the pocket at body temperature. In this way, crude examination of routine samples during periods of emergencies may be made.[5]

Whenever biological warfare is suspected to have been used, general instructions should be issued to the public regarding the precautions to be taken in connection with normal water and food supplies.

The fact that boiling water and foodstuffs is an effective method of destroying all known pathogens and most toxins gives us a very powerful defense weapon provided this procedure is carried out. Other specific defense measures designed to counteract various types of biological attack are still on the secret list and therefore cannot be discussed here.

For the most part, the rest of the defensive measures revolve around the usual procedures taken to combat and prevent the outbreaks of natural disease. Such measures as maintaining the individual health at the highest level to promote a good general resistance to all disease will be obvious. In addition, the use of specific and well-tried immunization techniques, where they are available, will also be of value. Routine vector control will limit the possibility of the spread of the vector diseases by their usual channels. However, it must be remembered that many of these diseases can be spread by aerosols, in which circumstances the vector is not involved in the primary spread of infection. Similarly, specific measures designed to protect food and water from contamination can be expanded according to the local circumstances to provide emergency protection from enemy attack.

None of these objectives, however, can be attained without careful and detailed planning well in advance. Such planning must be made in the light of experience received from careful research into the methods of attack and defense. To make these plans effective requires the use of increased numbers of personnel who must be trained and equipped to do the jobs that are required. In the long run, none of this can be attained unless adequate funds are available to finance each of these stages.

In conclusion, it may be stated that whereas the initial impression of biological warfare creates a picture in the mind of horror and desolation, there is much comfort to be gained from the review of the normal and emergency protective and defensive services that may be brought into play. However, it must be remembered that to make these forces effective, money must be appropriated so that research can be conducted to find the best defensive measures. It should also be remembered that this research is not limited to purposes of war. Much of it is related to the fundamental problems of health and disease.

405 Hilgard Avenue.

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Attitudes Toward Specific Therapies

GERALD G. JAMPOLSKY, M.D., *San Francisco*

• *Attitudes of the physician and attitudes of the patient may affect the rational use of specific therapies. An example is the use of penicillin for the common cold. A survey showed that 25 per cent of physicians and 16 per cent to 22 per cent of three other groups polled had received penicillin for a cold, although there is no rational basis for such therapy.*

Evaluation of both the physicians' and patients' attitudes toward specific therapies might lead to a more rational treatment of the patient as a total personality.

WITH SO MANY NEW DRUGS on the market and so much advertisement of them, some patients and some physicians seem to have developed false expectations as to what these drugs can do. It is probable that such drugs as the antibiotics are often given in the absence of valid indications. The possible harm that may result from such a procedure is occasionally disregarded.

A review of both the physician's and the patient's attitude toward some of these drugs should help toward better evaluation of specific therapy for the patient as a total personality.

The question of whether it may be unwise to give penicillin to patients with a common cold was raised by Smith and Bloomfield[3] in 1948. Relevant to the question are the observations that:

1. There is no rationale for treating the common cold with antibiotics. The treatment remains symptomatic.[2]

2. There may be spontaneous occurrence of new bacterial infections during the course of treatment with penicillin.[4]

3. The needless administration of penicillin for the common cold promotes the emergence of strains of bacteria intensely resistant to its action among the organisms present in the body cavities. These organisms may then or later be the cause of a serious disease.[1, 3, 5]

4. Allergic sensitization to penicillin may occur after useless therapy which will prevent its employment at a later and more significant occasion.

Thus it would seem only logical not to use penicillin for the treatment of the common cold. But what are the facts regarding the use of penicillin for that purpose?

Three questions were put to persons of four groups, each group including 100 persons. The three questions were: (1) Have you ever taken penicillin? (2) Have you ever taken penicillin for a common cold? (3) Have you ever had a rash following penicillin therapy?

Group 1, the control group, consisted of 100 persons whose names were obtained at random from the telephone directory. Group 2 consisted of 100 physicians whose names were obtained at random from the telephone directory. Group 3 was made up of 100 consecutive new outpatients admitted to Stanford University Hospital, and Group 4 of 100 patients in the Stanford University Hospital Pediatric Outpatient Clinic. The answers are given in Table 1.

It would appear, then, that a very large proportion of the population has had penicillin therapy and that a considerable number of persons have been given the antibiotic for treatment of a cold. The question of whether penicillin is being used indiscriminately thus arises. The fact that many physicians took penicillin themselves for a cold may be considered a factor in the prescriptions for patients.

There are many pros and cons regarding the advisability of withholding penicillin for various infections until cultures and bacteriological studies have been made. There seems to be little warranty, however, for giving penicillin for the common cold. What, then, are some of the motivations for this practice?

Certainly false expectations on both the part of the physician and patient as to what penicillin can do for the common cold is a paramount factor. If a physician does not give penicillin to a patient who expects it, the patient may go to another physician. Therefore a physician should be alert for such false expectations and be able to deal with them logically. The feeling of urgency on the part of the patient to have something specific done is as important as the

From the Department of Medicine, Stanford University School of Medicine.

TABLE 1.—*Incidence of use of penicillin in persons of various groups*

Group (100 persons in each group).	Received Penicillin			Penicillin for Cold			Rash Following Penicillin		
	Yes	No	?	Yes	No	?	Yes	No	?
1. (Control. Names taken at random from telephone directory)	49	45	6	22	78	0	12	88	0
2. (Physicians. Names taken at random from telephone directory)	62	38	0	25	75	0	7	93	0
3. (General outpatient department patients)	43	51	6	16	84	0	16	84	0
4. (Pediatric outpatient department patients)	65	35	0	16	84	0	4	96	0

feeling of urgency on the part of the physician to do something specific. Pecuniary aspects should also be considered as a factor in the compulsion to supply specific therapy.

None of those factors nor all of them are cogent enough to stand in the way of rational treatment of the disease and of the patient as a person. Perhaps some of the same factors operate in consideration of other forms of specific therapy such as administration of hormones or of other antibiotics, certain surgical procedures, electric shock therapy and others.

2521 Octavia Street.

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Psychiatric Contraindications to Pregnancy

With Reference to Therapeutic Abortion and Sterilization

JEROME M. KUMMER, M.D., *Santa Monica*

• Pregnancy and parturition are not considered the basic causes of associated mental disorders, but as precipitating stresses.

Pregnancy and parturition are thought to involve conflicts relating to dependency needs, homosexuality and hostility toward the child and husband.

The incidence of psychoses related to pregnancy and childbirth appears to be declining.

Therapeutic abortion and/or sterilization are indicated when continuance of pregnancy or future pregnancies would be likely to precipitate severe mental disease. Among the important factors to be weighed in considering a recommendation for abortion or sterilization are: the pattern of previous psychotic reactions (severity, duration, reversibility, relation to pregnancy), the physical constitution of the patient, the religious and other personal beliefs of the patient and her family, the desire for parenthood, and the number of living children.

A physician would do well to consult the laws of his state with regard to abortion and to call upon suitable consultation in approved hospitals as safeguards against subsequent legal complications. The legal situation regarding sterilization appears to be less complex.

IT IS WELL KNOWN and accepted that pregnancy and the puerperium impose a physical and physiological strain upon the mother. In addition there is an emotional stress, in part caused by the physical and physiological changes in pregnancy, but to a much larger extent quite distinct and unrelated to that condition. This emotional stress, which occurs in varying degrees in all women during pregnancy, is much more prominent and considerably more disabling in persons with preexisting emotional and personality disorders, particularly those with a history of previous overt mental illness.

Owing to the severity of the stress and the comparative inability of women with emotional disorders to cope with it, pregnancy and the puerperal state are often the precipitating factors of severe and frequently long-lasting mental illness that has profound effect upon the health and life of the woman and upon the immediate family, deprived of both mother and wife. The cost to the family and community, however secondary in consideration, is nevertheless of tremendous importance and further reason for physicians to be concerned with prevention.

ETIOLOGY

From Zilboorg's[20, 21, 22] considerable contributions to the theoretical understanding of mental illnesses related to pregnancy and childbirth have come useful developments in the psychotherapeutic management and prevention of these and related disorders. He postulated that pregnancy and parturition, owing to the significant sexual implications and to the associations with earlier family relationships, accentuate and bring to the surface old and forgotten feelings and attitudes that are difficult for the woman to cope with. The intensity of these buried feelings and the strength of the personality to meet the onslaught determine the severity of the reaction.

Zilboorg noted that in women with schizophrenic reactions the premorbid personality was characterized by shyness, withdrawal, rigidity, sexual frigidity and much evidence of latent homosexuality. These observations have, for the most part, been corroborated by others.[1, 6, 16]

The depressive reactions, on the other hand, stem from the patient's needs to be dependent upon her mother, together with an inability to accept the new role of mother to a small child "with all the love going out and none coming in," as one patient put it. Universally observed in all different forms of reaction is unconscious hostility toward both the child and the husband. The child becomes the personification of the patient's frustrated need to be dependent, whereas the husband becomes the culprit "who did this to me."

Toxic-exhaustive factors do not play the important role formerly assigned to them. Two reasons are considered responsible for this diminution: (1) The previously widespread orientation of physicians to concepts of disease as wholly organic led quite naturally to more diagnoses in this category than the currently prevalent dynamic orientation would

permit; and (2) advances in understanding pregnancy and the puerperium together with newer therapeutic techniques have made it possible to prevent or arrest toxic-exhaustive factors in cases where they might otherwise play a part in mental illness. This is illustrated in Table 1.

Linn and Polatin,[6] in summarizing a report they made on the subject, wrote: "While toxic factors figured significantly in the onset of their illnesses, a detailed study of one of these two cases made it clear that the toxic factor was in the nature of a last straw and that other factors were much more important." Similar observations have been reported by other investigators.

INCIDENCE

Statistics on mental illness associated with pregnancy and parturition indicate a gradual diminution in incidence (Tables 2 and 3).

The dimunition related to the number of births is probably owing for the most part to the previously mentioned better control of toxic-exhaustive factors. The decrease noted in relation to the number of women admitted to hospital is believed to be attributable to other factors in addition to the foregoing: (1) The increased tendency to hospitalize patients for mild conditions, for which previously hospitalization would not have been considered; and (2) the relative amenability of illnesses associated with pregnancy and childbirth to the newer forms of psychiatric treatment.

TABLE 1.—*Diminishing incidence of toxic-exhaustive reactions in pregnancy and puerperium.*

Authors and Year of Publication	Total in series	Toxic-exhaustive Cases	
		Number	Percent
Gregory,[5] 1924	114	31	27
Smalldon,[16] 1940	220	8	4
Brew and Seidenberg,[1] 1950	83	4	5
Linn and Polatin,[6] 1950	22	2	9

DIAGNOSIS AND PREVENTIVE TREATMENT

Early diagnosis is desirable, for it increases the possibility of preventing progression to a more disabling illness. This is important from an obstetrical standpoint, if the treatment indicated happens to be therapeutic abortion. It is likewise important if the pregnancy is to continue and shock therapy and/or psychotherapy are recommended; it gives the psychiatrist a longer time to work with the patient. This is particularly significant with regard to psychotherapy, not only because this form of therapy takes considerable time but also because the delivery date looms as a deadline, for which the psychiatrist must prepare the patient.

The diagnosis of overt mental illness presents little, if any, problem to the attending physician. The family or the patient herself will frequently recognize the more florid symptoms such as severe depression or agitation, hallucinations, delusions, and fears that the baby is abnormal or that harm will befall the child. Frequently the patient expresses dread that she might inflict severe harm on the baby. It takes an astute physician, however, to recognize the earlier, warning signals of oncoming illness. Titus[19] observed persistent insomnia as the most important early symptom of impending psychosis. He also relied heavily on a careful history. "A history of previous attack [psychosis], whether associated with an earlier pregnancy or not," he said, "warrants early consultation and reference of the patient to a psychiatrist."

Fishback,[4] in addition to insomnia, listed these danger signs: Pronounced restlessness, undue fears or worries, and notable changes in character. Several other early symptoms that should place the attending physician on guard are: Pronounced alterations in appetite, particularly anorexia, unusual changes in libido, hypochondriasis, and severe, prolonged hyperemesis.

TABLE 2.—*Incidence of psychoses associated with pregnancy and parturition correlated with the number of births*

Authors	Region	Time	Number of Births	Psychoses in Mothers	
				Number	Percent
Lloyd[7]	England and Wales	1878-1882	3,500,000	1,794	0.5
Noyes[10]	Dublin	?	54,000	81	0.15
Brew and Seidenberg[1, 8]	Syracuse	1933-1946	65,585	103	0.13

TABLE 3.—*Incidence of psychoses associated with pregnancy and parturition correlated with the number of women admitted to various mental hospitals.*

Authors	Region	Time	Number of Admittances of Women	Psychoses	
				Number	Percent
Lloyd[7]	Europe	1889	8,843	781	8.8
Zilboorg[20]	Europe	Late 19th century	10,394	904	8.7
Zilboorg[20]	New York State	1916-1921	16,286	560	3.4
Fishback[4]	Illinois	1930-1932	1,955	88	4.5
Brew and Seidenberg[1]	Syracuse	1933-1946	3,456	103	3.0
Brew and Seidenberg[1, 9]	New York State	1933-1946	83,182	1,063	1.3

Owing to the lack of suitable statistics and to the many variables involved, it is not possible at this time to state, even roughly, how many serious mental illnesses associated with pregnancy and parturition could be prevented with the appropriate procedures. It can be said, however, that a significant reduction is being effected today through early institution of the proper treatment. This is owing in no small part to the increased alertness of obstetricians, who detect questionable cases and seek early consultation. With an extension of the indicated measures, a much greater reduction could reasonably be expected. There is great need for factual studies in this area.

Psychotherapy

A psychiatrist examining patients referred because of suspicion of mental illness will (if the diagnosis is confirmed) classify them in one of three broad categories: (1) Those suitable for psychotherapy—capable of acquiring and integrating insight; (2) those suitable for only a limited amount of insight therapy and in need of psychotherapy of a supportive type which makes use of such techniques as ventilation, reassurance, suggestion and persuasion; and (3) those who are entirely unsuited for insight psychotherapy. Not only are patients in this group unable to achieve insight, but attempts in that direction might prove harmful, in that psychosis may be precipitated. Patients of this order should receive only supportive psychotherapy (if any at all), as outlined by the psychiatric consultant.

Shock Therapy

Convulsive therapy, most often electroshock but sometimes insulin shock, is used extensively in the treatment of mental illnesses associated with pregnancy and childbirth. In general, treatment of this kind is not considered prophylactic, although Stevenson and Geoghegan[17, 18] reported upon the use of electroshock in the prevention of recurring manic-depressive illness. More investigation, however, is required to further evaluate this preliminary study.

Inasmuch as electroshock is considered symptomatic treatment, psychotherapy should be used in conjunction with it wherever possible in suitable cases to attempt to work out the basic causative factors.

THERAPEUTIC ABORTION

No hard and fast criteria have been established for the indication of therapeutic abortion in connection with mental illness, and considerable diversity of opinion exists among psychiatrists and others in the medical profession. Any one or more of the following minimal indications should cause the attending physician to consider the patient as a possible candidate for therapeutic intervention and/or sterilization: A history of mental illness (1) related to pregnancy or parturition, (2) which required hospitalization, (3) associated with hallucinations, delusions or ideas of reference, (4) requiring shock therapy, (5) lasting one month or longer, (6) associated with suicidal trends or attempts, (7) associated with assaultiveness or homicidal trends, and (8) in others in the family.

Factors which merit consideration by psychiatrists include the severity, duration, reversibility, relation to pregnancy and the hereditary aspects of previous reactions. Where there has been no previous reaction, a psychiatrist, through his examination and with his understanding of the psychodynamic factors involved, should be able to render an opinion as to the susceptibility of individual persons. Other important factors requiring appropriate consideration are the general health of the mother, religious and other personal beliefs of the patient and her family, the desire for parenthood and the number of living children.

If the patient and her family are unable to follow a recommendation of therapeutic intervention, assurance should be given that alternate procedures will be utilized to avoid a serious illness, and that if such a reaction does occur, prompt treatment will be instituted toward effecting a remission.

The author feels that much of the literature on the subject tends to deal with mental illness too lightly and fails to fully grasp the seriousness that should correctly be associated with schizophrenic reaction, manic-depressive psychosis, severe reactive depression or obsessive-compulsive neuroses of the more disabling types. Also, insufficient emphasis is placed on the poor environmental influences exerted on a child by a mother having a history of schizophrenic or manic-depressive illness.

The literature on the subject is discordant. Reis[14] noted that dementia praecox (schizophrenic reaction) is definitely aggravated by pregnancy and that most authorities recommend the interruption of pregnancy, usually with sterilization, for this condition. He also stated that the course of manic-depressive illness is not influenced by pregnancy and therefore such illness does not constitute an indication for therapeutic abortion.

Singer[15] stated that in dementia praecox and paranoid conditions, abortion is of no help and that a mental state is seldom, if ever, justification for abortion.

The author takes issue with Singer's views and also with the idea expressed by Reis that manic-depressive psychosis is not influenced by pregnancy and is not an indication for abortion. The literature contains ample references to support belief that pregnancy does influence manic-depressive psy-

chosis.[1, 4, 5, 7, 16, 20, 22] Ebaugh and Heuser[2] said that "in selected cases of manic-depressive psychosis, the interruption of pregnancy may be advisable owing to the inability of the patient to care for the child and the problem inherent in management, confinement and labor." They further stated, "In pregnancy occurring in the single, young woman with resultant self-guilt and depreciation, coupled with strong, energetic suicidal drives, the interruption of pregnancy should be carefully considered."

In general, therapeutic intervention should be considered when the history and psychiatric examination give strong reasons to believe that the pregnancy, if permitted to continue, or the delivery, would result in a mental illness of a serious nature. As to what constitutes a *serious* illness, some of the criteria are: (1) the possibility of the patient's injuring or killing herself; (2) the possibility of the patient's injuring or killing others, particularly the newborn; (3) the problems related to management (hospitalization, restraint, care of the newborn, etc.); (4) extremes in anguish as seen in some obsessive-compulsive neuroses; (5) the length of the illness; the reversibility of the illness, either spontaneously or with treatment; (6) the effect upon the child through heredity and environment.

Appropriate emphasis, as mentioned previously, must be placed on a history of previous psychotic or depressive episodes and particularly those related to pregnancy. Fishback[4] concluded that "it is evidently possible for a woman, who became mentally ill during or following a pregnancy, to pass safely through one or more later pregnancies, but the danger of recurrence is too great to warrant the risk."

STERILIZATION

Singer[15] and Eden[3] advocated sterilization rather than merely advising against conception, in cases in which both the attending physician and the consultant believe that future pregnancy should be avoided. Before advising sterilization, however, a physician must be quite certain that the basic pathological process is one that could not be reasonably expected to be reversed either spontaneously or with treatment. Here too, as with therapeutic abortion, due consideration must be given to the other factors mentioned.

There are variations in which the sterilization recommendation may be carried out. Some physicians prefer to advise careful contraceptive technique; then, if conception should accidentally occur, therapeutic interruption would be done together with tubal ligation. There are several drawbacks to this method. One is the emotional implications of abortion in our society (taking a life), which would make it desirable to avert the pregnancy in the first place, obviating the subsequent necessity of therapeutic abortion. A second possible drawback is that pregnancy itself, aside from childbirth, precipitates mental illness in a substantial percentage of cases. Of 2,727 cases (the total of several series[1, 4, 20]) of mental illness associated with pregnancy and parturition 15 per cent began before delivery. Another obvious drawback to having patients rely exclusively on contraception is that a severe emotional strain is put upon them and their husbands if they know that a double surgical procedure awaits any slip in contraceptive technique. It should be apparent that keeping patients free from anxiety and tension-producing situations is basic in the management of such cases.

It is occasionally pointed out that a severe reaction, equal to that possible from pregnancy and childbirth, might be precipitated by the operative procedure of abortion and sterilization. While that may be true, it is important to note that the incidence of postoperative reactions is quite low. As a possible means of preventing such a reaction, it might be more desirable to utilize a vaginal rather than an abdominal approach for tubal ligation. A gynecologist should be consulted regarding the feasibility of such an approach. In a small percentage of cases it might be deemed preferable for the husband to have vasectomy than for the wife to be subjected to operation. In this connection, however, one must be aware of the possible psychological trauma to the man; only too often vasectomy is unconsciously regarded as castration and punishment.

Perlmutter[11] reported from 6 per cent to 17 per cent of therapeutic abortions done in various institutions were for neurological and psychiatric reasons. At Bellevue Hospital in New York 50 per cent of patients in whom pregnancy was interrupted for those reasons were also sterilized.

LEGAL ASPECTS

In this country only three states (Colorado, Maryland and New Mexico) and the District of Columbia make specific provisions for legal abortion if the future health of the mother is endangered. Elsewhere only threat to the life of the mother is considered as justification. (Physicians are advised to consult local statutes. Laws have lagged considerably behind medical progress and much diversity exists.[2])

Ethical physicians are protected by a more liberal interpretation of the word *life* in such statutory phrases as *necessary to preserve the life* or *to save the life*. Regan[12] observed that "judicial interpretation, meager as it is, is in accord with the generally held medical opinion that a therapeutic abortion is permissible to preserve the life or health of the

woman — though the indication be substantially short of an actual necessity to prevent imminent danger to her life."

Regan urged that physicians be cautious and advised that they not carry out abortion without first calling in reputable consultation and obtaining a concurrence of medical opinion on the necessity. He noted that so far as could be determined not a single prosecution has taken place where this procedure has been followed. Attention should be directed to the practice, now common in major hospitals, of requiring the approval of a special committee of the staff before therapeutic abortion may be carried out. Regan recommended that the laws be changed to limit the performance of lawful abortion to a licensed physician and surgeon, in a hospital, and that a broadening of the *exceptions* should be provided to include preservation of the health of the woman. "In this connection," he said, "it should be realized that the probability of the delivery of a grossly defective child poses a serious threat to the physical and mental health of the pregnant woman."

Concerning sterilization, Regan[13] said: "Sterilization in California and in other states constitutes the crime of mayhem, except when done upon a positive medical indication, namely in order to safeguard the patient's health or to preserve her life. Where for the reasons just mentioned, it is necessary to avoid pregnancy, it may be legally proper to perform a vasectomy on the husband." Where any doubt exists, consultation is recommended as a further safeguard.

2200 Santa Monica Boulevard.

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The Exercise Test in Electrocardiography

Detection of Coronary Artery Disease

M. FREDERICK LEEDS, M.D., and STANFORD S. KROOPF, M.D., San Francisco

• Master has proposed a test for detection of latent coronary artery disease by means of electrocardiograms made after standard exercises consisting of walking back and forth over two steps. This test was used in routine examinations of airline employees, with the special purpose of evaluating the test for use on apparently normal persons.

Of 526 males tested, 283 were under 40 years of age and 243 were aged 40 years or more. Coronary artery disease was indicated in 16 males in whom there was no other evidence of the disease, five of whom had hypertension. No electrocardiographic evidence of coronary artery disease was obtained for three males in whom the disease was diagnosed or was strongly suspected. The test gave negative results for 16 males whose electrocardiograms made at rest were compatible with coronary artery disease. The percentage of positive results in men under 40 years of age was 4.3; in men over 40, 0.6.

Of a control group of 69 women under the age of 35 years, in none of whom coronary artery disease was detected by other means, six had positive response to the test.

It is concluded that Master's criterion for the most common positive finding, a depression in the ST segment of over 0.5 mm., allows too many false positive findings and that a figure of 1.0 mm. to 1.5 mm. would be a better index. A negative finding apparently does not exclude the possibility of coronary artery disease or of coronary occlusion. The usual 12-lead electrocardiogram made at rest appeared to be of greater value in detection of latent coronary artery disease in apparently normal persons.

CORONARY ATHEROSCLEROSIS may be present to a significant degree in a person who has no history suggestive of the condition and in whom it is not disclosed by physical examination or by electrocardiograms made at rest. A simple and reliable test for detecting latent coronary artery disease in such a person would be of great value. Several reports in recent years have described the use for this purpose of the electrocardiogram made after exercise.[4] The two-step exercise test developed by Master[2] seemed to the authors the most logical test because it is well standardized for age, weight and sex, is simple for the subject to carry out, and does not involve unusual activity or occasion anxiety. Master has recommended that the test be used in the routine examination of persons over the age of 35 years, those undergoing excessive stress, athletes, military recruits, pilots and industrial employees.[5, 6]

This presentation describes the authors' experience with Master's test in the examination of 595 employees of a large airline, of whom 283 were males over 40 years old and 243 were younger males. Whereas most published reports of exercise tests[1, 3, 7, 8] are concerned with patients in whom the diagnosis of heart disease had been made or was being considered, the study here reported was made in connection with routine physical examinations of persons who were considered healthy. The authors were particularly interested in evaluating the test as a means of detecting latent coronary artery disease in such persons.

METHOD

A twelve-lead electrocardiogram was made on each subject at rest. Three electrocardiograms were made with the three standard leads and the fourth unipolar chest lead, one of them immediately after exercise, another at two minutes, and the third at six minutes. All electrocardiograms were made with the subject recumbent, in a quiet, relaxed atmosphere and at least an hour after eating.

The exercise in the standard two-step test consists in walking back and forth over two steps nine inches high for a specified number of trips in one and one-half minutes, the number of trips depending on age, weight and sex. It has been reported that in cases in which positive findings are not obtained with this test they may be obtained with the double test, in which twice the number of trips are made in three minutes. To minimize the possibility of false negative results, the double test was used exclusively in the study here reported. A Sanborn Viso-Cardiette was used throughout the entire study.

Master's criteria[4] were used in interpreting the electrocardiograms:

1. A depression of the ST segment in any lead of over 0.5 mm. as compared with the PR interval of the same cycle, the level of the string just following the QRS complex being compared with that immediately preceding the complex. (To avoid erroneous interpretation of ST segment levels, only those series of beats having an essentially horizontal base line were considered.)

2. Changes in T wave direction in any lead, except the third standard lead.

3. Development of arrhythmias or large abnormal Q waves.

4. Changes from normal to abnormal conduction.

Five hundred and twenty-six males were studied, 283 under 40 years of age and 243 aged 40 years or more. Of the males, 157 were flight employees and 369 were not. Because of the rarity of coronary atherosclerosis in healthy young females, 69 females under the age of 35 years were tested as a control series.

RESULTS AND REPORTS OF CASES

Electrocardiograms made after the exercise test gave positive results in 11 males for whom there was no evidence of coronary artery disease on clinical examination or in electrocardiograms made at rest:

Age	Occupation	Electrocardiogram Following Exercise*
32	Flight Engineer	ST depression 1.0 mm. in V4, rate 85.
34	Pilot	ST depression 0.75 to 1.0 mm. in standard leads II and III, rate 110.
32	Pilot	ST depression 1.5 mm. in V4, rate 78.
30	Pilot	ST depression 0.75 to 1.0 mm. in standard leads II and III, rate 90 (Figure 1).
30	Pilot	ST depression 0.75 to 1.0 mm. in V4, rate 90.
35	Stockroom clerk	ST depression 0.75 in standard lead II, rate 85.
35	Laborer	ST depression 0.75 to 1.0 mm. in standard lead III, rate 62.
36	Laborer	ST depression 1.5 mm. in V4, rate 80.
35	Junior executive	ST depression 0.75 mm. in V4, rate 92.
37	Office Employee	ST depression 1.0 mm. in standard lead II, 0.75 mm. in V4, rate 90.
42	Mechanic	ST depression 1.0 mm. in V4, rate 114.

Positive results were noted in electrocardiograms made immediately after exercise in five males in whom no abnormality was evidenced by electrocardiograms made at rest but who had hypertension:

1. A 34-year-old flight engineer had no history of cardiovascular disease. Blood pressure was 150 to 160 mm. of mercury on systole, 90 to 96 mm. on diastole. He was moderately obese and had prematurely gray hair. No abnormality was noted on examination of the heart and the heart appeared of normal size in an x-ray of the chest. In the electrocardiogram taken after the exercise test there was an ST depression in V4 of 0.75 to 1.0 mm. at a rate of 124.

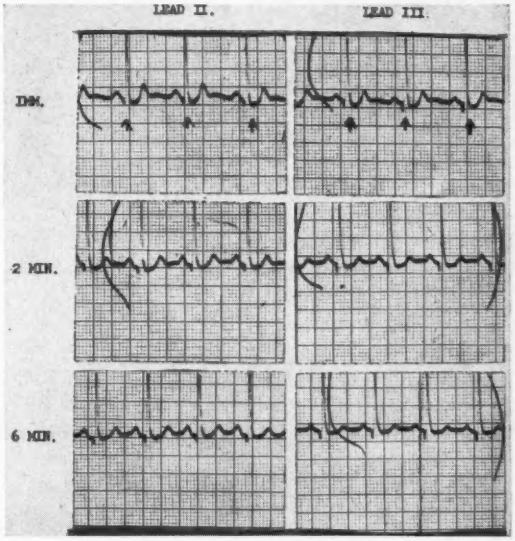

Figure 1

2. A 61-year-old mechanic had hypertension without symptoms. Blood pressure was 170 mm. of mercury on systole, 100 mm. on diastole. No abnormality was noted on examination of the heart and the heart appeared of normal size in an x-ray film. In the electrocardiogram taken after the exercise test there was an ST depression of 1.0 mm. in V4 immediately after exercise at a rate of 100.

3. A 41-year old ground employee had no history of cardiovascular disease and no evidence of such disease on physical examination, except for blood pressure of 160 mm. of mercury on systole and 100 mm. on diastole. In the electrocardiogram taken after the exercise test there was an ST depression in V4 of 1.0 mm. at a rate of 60.

4. A 54-year-old ground employee had no history of cardiovascular disease and no evidence of it in examination of the heart except for blood pressure of 180 mm. of mercury on systole and 100 mm. on diastole. The heart appeared of normal size in an x-ray film. In the electrocardiogram taken after the exercise test there was a depression of ST of 1.0 mm. in lead II and of 0.5 to 0.75 mm. in lead III and V4, at a rate of 86.

5. A 40-year-old office employee, prematurely aged in appearance, had had hypertension for about seven years (blood pressure 180 mm. of mercury on systole, 100 mm. on diastole). The arterioles in the ocular fundi showed Group II changes (Keith-Wagener-Barker). There was a blowing murmur of grade 2 to 3 on systole, in the fourth interspace near the left sternal border, which had not been observed in previous examinations. The heart appeared of normal size in an x-ray film. In the electrocardiogram after the exercise test there was depression of ST in lead II of 0.75 mm. at a rate of 90.

Electrocardiograms made at rest and after exercise gave no evidence of abnormality in three males in whom coronary artery disease was diagnosed or was suspected on clinical evidence:

*All abnormalities described occurred in tracing taken immediately after exercise with return to normal limits within six minutes.

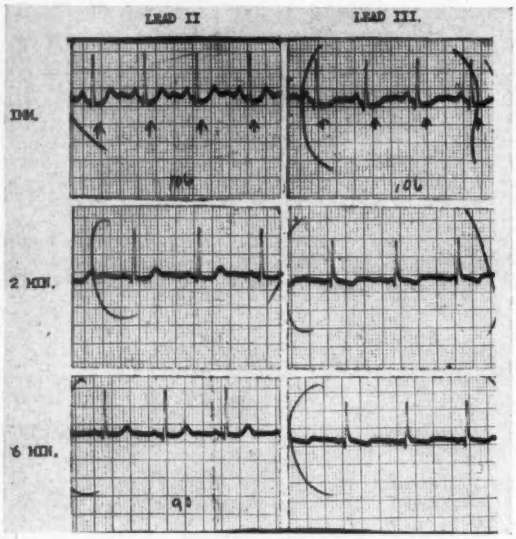

Figure 2

1. A 53-year-old ground worker had no history of heart disease, and physical examination and electrocardiograms disclosed no abnormality. Six months later he was suddenly seized with severe substernal pain which radiated to the left arm, the jaw and the upper back. He was immediately hospitalized but died four hours after the onset of pain. At autopsy advanced coronary atherosclerosis was found, and also a recent coronary occlusion which was considered to be the cause of death.

2. A 55-year-old male who was examined for employment was 66 inches tall and weighed 270 pounds. Blood pressure was 180 mm. of mercury on systole and 90 mm. on diastole. Glycosuria (3 plus) was noted. Electrocardiographic findings were within normal limits and no other abnormalities were observed. The subject refused further studies to determine the significance of the glycosuria; it can only be suspected that he had diabetes mellitus. (Strong suspicion of coronary artery disease in this case was based on extreme obesity, hypertension and glycosuria.)

3. A 36-year-old white male had no history of heart disease, and no such abnormality was observed on physical examination or in electrocardiograms. He remained apparently in good health for 19 months until severe crushing substernal pain developed with radiation down the left arm. After the pain had persisted for several hours he was hospitalized. Serial electrocardiograms made during four weeks of hospitalization were compatible with the diagnosis of anterior myocardial infarction.

For 16 males who had no clinical evidence of rheumatic or other non-coronary heart disease, and for whom electrocardiograms made after exercise gave no sign of abnormality, there were findings compatible with a diagnosis of coronary artery disease in electrocardiograms made at rest. Of these subjects, five had right or left bundle branch block. The others had abnormalities in the T, Q, or R waves or defective intraventricular conduction. These 16 were 3.04 per cent of the 526 males examined.

Of the 69 females under the age of 35 years who were examined, none had any history of cardiovascular disease or any indication of such disease observed in physical examination or in electrocardiograms made at rest, but six had positive response to the test in electrocardiograms made after exercise. In these six there was no evidence of neurocirculatory asthenia, unusual emotional reaction to the test, anemia, or other extracardiac factors which might have caused false positive reaction. These six were 8.7 per cent of all the females examined. Abnormalities observed electrocardiographically were as follows:

Age	Occupation	Electrocardiogram Made After Exercise*
24	Secretary	ST depression 0.75 to 1.0 mm. in V4, rate 98.
32	Stewardess	ST depression 0.75 to 1.0 mm. in standard lead II, rate 112.
22	Stewardess	ST depression 0.75 mm. in standard lead II and V4, rate 90.
22	Stewardess	ST depression 0.75 to 1.0 mm. in standard lead II and V4, rate 114.
27	Secretary	ST depression 0.75 mm. in standard lead III, rate 110.
26	Secretary	ST depression 0.75 to 1.0 mm. in standard leads II and III, rate 106 (Figure 2).

DISCUSSION

Of the men in this study who had no evidence of heart disease observed by other tests, the ten under the age of 40 years with positive response to the exercise test were 4.3 per cent of the 232 in their age group, and the man over 40 years of age was 0.6 per cent of the 169 in his age group. The possibility of undue anxiety at the time of the test can be reasonably excluded in the case of these 11 men, and such factors as thyroid or digitalis medication, abnormal tachycardia following exercise, or eating shortly before the test, which have been reported[5] as causing false positive results, were absent in all cases.

Master states[5] that positive findings in this test may be the only objective indication of coronary disease. The authors hesitate to conclude, however, that the 11 men had coronary artery disease, as the proportion of men under the age of 40 years with positive response to the test is relatively high as compared with the older group, a finding incompatible with the expectation for these ages.

In the case of the five men with hypertension, the electrocardiogram made immediately after exercise was the only one indicating possible association of hypertension with coronary artery disease. An adequate follow-up period will be necessary for evaluation of these findings, which have made the authors

*All abnormalities described occurred in tracing taken immediately after exercise and all returned to resting level within six minutes.

alert to the possibility of coronary artery disease in these persons but do not seem to justify a conclusive diagnosis. If false positive findings can be obtained in normal persons, it is reasonable to assume that such findings may also be obtained in those who have hypertension.

Of special interest by contrast is the finding of positive response in electrocardiograms made at rest in 16 persons who had negative response after exercise—apparently a detection rate approximately four times as great as that for the exercise test. This proportion is of course somewhat conjectural, since in either group there is a possibility of false positive response. This possibility is further confirmed by the findings in healthy young women. Indeed, the electrocardiograms which were interpreted as positive in this series would have been considered negative by the stricter criteria of other investigators than Master.[8] Depression of the ST segment, which was the most frequent change in the electrocardiograms, was nowhere greater than 1.5 mm. From the frequency with which depression as great as 1 mm. occurs in apparently normal persons it seems likely that this result should be considered within normal range.

The possibility of false negative results, emphasized by the frequency of negative results in men over 40 years of age, must be considered even in the case of the three men in whom coronary artery disease was diagnosed or strongly suspected. Adequate follow-up of all cases with negative findings will be necessary to clarify this aspect of the problem.

As most of those examined had apparently normal hearts, the authors cannot evaluate the test as an aid in the differential diagnosis of pain in the chest or in the study of patients with overt cardiac disease or coronary insufficiency. In evaluating the test as an aid in the detection of unsuspected coronary artery disease at the time of routine periodic examination, it must be kept in mind that coronary artery disease can be present without causing symptoms of coronary insufficiency. It is probable that many persons who have atherosclerosis of the coronary artery—and who might at any moment have coronary occlusion—have "adequate" coronary flow after exercise, insofar as adequacy can be determined from clinical history and examination. In such circumstances the result of the test might be negative even though the person tested was a candidate for myocardial infarction.

CONCLUSIONS

On the basis of the findings in the study here reported, the following conclusions seem justified:

1. In tests on an average group of persons, a significant number of electrocardiograms made after the two-step exercise have a depression in the ST segment of over 0.5 mm. Therefore a standard of 1.0 to 1.5 mm. for this reading would be a better index of coronary artery disease and would be less likely to lead to false positive interpretation.

2. A negative finding in a double two-step exercise test does not exclude the possibility of latent coronary artery disease or of coronary occlusion.

3. The usual 12-lead electrocardiogram made at rest appears to be of more value than the electrocardiogram made after exercise in the detection of latent coronary artery disease in apparently normal persons.

536 Mason Street.

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Palm Thorn Injuries

Difficulty in Diagnosis of Late Sequelae

LEWIS COZEN, M.D., and MAXWELL FONDA, M.D., Los Angeles

• Injuries in which palm thorns become embedded in soft tissues or cartilage, leaving no external evidence of their presence, sometimes present a baffling diagnostic problem. A high index of suspicion is the most important aid in diagnosis. Laboratory findings are not helpful and rarely can conclusive diagnosis be made from clinical examination. Surgical excision of the buried thorn is the only satisfactory treatment.

IN SOUTHERN CALIFORNIA where sharp-tipped palm fronds lie beneath trees in many places that children use for play, puzzling problems in diagnosis sometimes are posed by lesions caused by the unsuspected presence of a palm thorn that remains embedded in deep tissue, perhaps in or near a bone, after the site of penetration has healed.

For synopsis and illustration of the various features and circumstances in such cases:

A child at play falls upon a palm leaf and a cone shaped thorn (or thorns) penetrates the skin, usually at the knee, and breaks off. A parent, examining the wound, may not see the thorn if it is broken beneath the surface of the skin, or may withdraw one that is visible and leave another that is concealed. A few days later there may be swelling at the site of injury and the child may limp and complain of pain. A physician examining the child finds no indication of trauma, for the puncture wound is by then completely healed. He may note some effusion of the knee joint (if that is the area involved) and some limitation of motion of the joint. There will be no fever, no leukocytosis, no acceleration of

From the Clinics of the Orthopedic Hospital, Los Angeles.

TABLE 1.—*Data on 11 cases of lesions developing from palm thorn wounds*

Case No.	Age and Sex	Area Involved	Diagnosis	Treatment	Result with Time Since Last Visit
1	10 M	Knee	History of palm thorn injury	Aspiration	3 months—normal
2	13 F	Middle of tibia	History of palm thorn injury	Excision of thorn in soft tissues of calf	9 years—normal
3	3 F	Knee	History of palm thorn injury	Excision	3 months—normal
4	12 M	Knee	History of palm thorn injury	Excision of thorn	4 months—normal
5	14 M	Foot	History of palm thorn injury	Excision of thorn	3 months—apparently normal
6	4 M	Lateral calf	Indefinite swelling of calf for 4 months	Excision of thorn. Exploration of fibula 2 months later	8 months—normal
7	9 M	Knee and ankle	History of palm thorn injury	Excision of thorn from knee and ankle	3 weeks—almost normal
8	11 M	Knee	History of palm thorn injury	Excision	1 month—almost normal
9	14 M	Knee	Indefinite	Irrigation of joint. Excision of thorn one month after first admission and irrigation.	Follow-up not available
10	11 M	Foot	Indefinite	None	Follow-up not available
11	5 M	Knee	Indefinite	Operative removal of 2 thorns from within knee joint	6 months

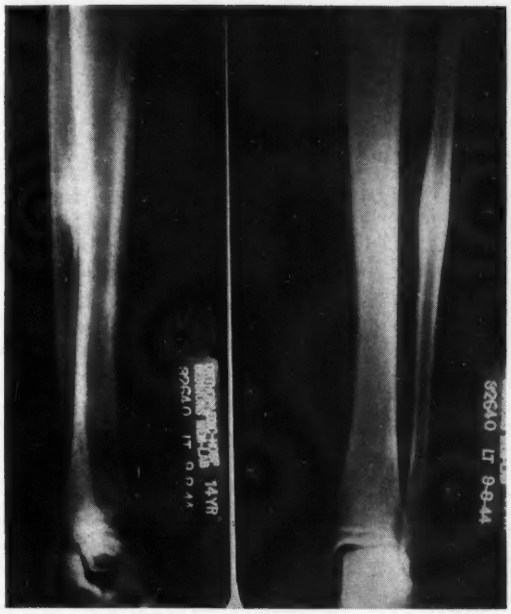

Figure 1.—Appearance of the fibula (Case 2) three years after accidental insertion of palm thorn adjacent to it.

the erythrocyte sedimentation rate, and at this stage no abnormality observable in x-ray films. Aspirated fluid will contain a slightly higher than normal

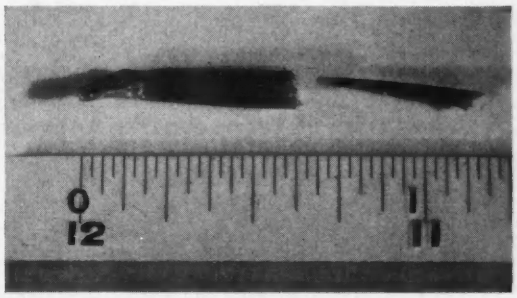

Figure 2.—These two large thorns were removed from the knee joint (Case 11). Presence of these palm thorns was difficult to ascertain by history.

number of leukocytes, but no organisms. Sooner or later, when swelling persists, the swollen area will be surgically explored, the thorn removed, and the symptoms then rapidly subside.

At the Los Angeles Orthopedic Hospital eleven patients with palm thorn injuries have been treated during the past 12 years. Features of those cases are summarized in Table 1. A recent article by Maylahn pointed out the diagnostic difficulties when thorns are in or near bone. One of the three cases he reported is included in this series (Case 6, Table 1).

2007 Wilshire Boulevard.

REFERENCE

Maylahn, D. J.: Thorn-induced tumors of bone, J. Bone & Joint Surg., 34:385, April 1952.

COMMENTS

The thorn punctured the knee joint but did not enter it. Hence, aspiration of the knee was sufficient therapy.

Excision of thorn and primary closure was performed 4 years after injury. Slight pain and swelling persisted during that interval. X-ray films revealed sclerotic reaction of tibia as a result of the adjacent inflammatory process. Swelling at incised area persisted after operation for two years.

Details of history are not available.

This case illustrates need for exploration of the knee if the joint is swollen after history of thorn injury. Physicians who had previously examined the patient reported that the thorn had not been left in the joint.

History was indefinite, making diagnosis difficult. One palm thorn was removed at time of accident. Persistent swelling suggested presence of another thorn. This was found at operation and removed.

X-ray films showed sclerosis like that in Ewing tumor. History of palm thorn injury was indefinite.

Swelling did not subside until operative removal of thorns two months after accident.

One thorn was removed at time of accident. It was not certain that any others were left until persistent swelling necessitated exploration and removal of thorn.

Closed irrigation of the joint did not cause subsidence of swelling. Exploration of the knee joint revealed the presence of a thorn.

Persistent swelling indicated diagnosis of thorn still in knee joint.

Physician who first treated patient thought that only one thorn went into the knee and he removed it. Persistent swelling, however, indicated probability of other thorns in the joint, which were found on exploration.

The Prognosis in Cataract Operations

A Correlation of Preoperative Appraisal with Results

WILLIAM A. PETTIT, M.D., Los Angeles

• *The preoperative and postoperative data on 500 cases in which cataracts were removed from the eyes were reviewed to correlate the results with the preoperative prognosis as determined by light identification and macular function tests. Another purpose was to consider the adequacy of various methods of preoperative appraisal.*

The vision was improved to better than 20/200 in 89.4 per cent of the cases. In 5.6 per cent (28 cases) vision was improved but was 20/200 or less. In 5 per cent (25 cases) the operation was a failure, for various causes.

There was wide variation in methods used to determine the condition of the retina preoperatively by means of light identification and macular function tests, and there was no uniformity of terms used to describe degree of function.

A standardized method of estimating retinal function in the presence of cataract was used in 60 cases. The equipment used is simple and inexpensive. From analysis of preoperative determination of prognosis and the operative results, it would appear that this simple inexpensive procedure is more reliable in arriving at a preoperative prognosis than some of the methods frequently employed.

IN 1939 the California State Legislature passed Section 3051 of the Welfare and Institutions Code authorizing the Department of Social Welfare to "provide treatment or operations to *prevent blindness* or *restore vision* to applicants for, or recipients of, Aid to the Blind . . ." The law states that, "This service shall be extended *only* to *those persons whose age* and *physical* and *mental condition* will *make such physical rehabilitation profitable to the individual.*"

The State Ophthalmologist is responsible for carrying out the intention and objectives of the law.

It therefore became a preoperative requirement to establish a prognosis indicating "preservation of vision" or "restoration of vision" before free treatment could be authorized.

Various methods of establishing a prognosis in the presence of cataract have been reported in the ophthalmological literature. The methods receiving the greatest recognition are those that were described by Duke-Elder,[1] Fuchs[2] and Young.[3] In all three methods, ability to distinguish points of light in various fields is used as a test of macular function.

In an effort to determine current procedures among California ophthalmologists, the author reviewed 500 preoperative reports on eyes from which cataracts were subsequently removed and compared them with the postoperative reports. The patients were all operated upon at the expense of the California State Department of Social Welfare. In 25 cases (5 per cent) useful vision was not restored. Of those operated on, 89.84 per cent had visual acuity of better than 20/200 90 days after operation. Five and six-tenths per cent had visual acuity of 20/200 or less but vision was improved enough to enable the patients to care for their personal needs.

The survey noted specifically the preoperative estimate of macular function and the method employed in making such estimate, as well as the method used in reporting "light projection," the compass of the visual field in which the direction of points of light can be seen. An effort was made to correlate the postoperative visual results and the condition of the fundus observed 90 days after operation with the preoperative report of macular function and light projection.

The author is the State Ophthalmologist of California.

Thirty surgeons, all diplomates of the American Board of Ophthalmology, participated in the surgical program. They reported on macular function in 484 eyes and on light projection in 417 eyes. Light projection was determined in most cases by the use of the ophthalmoscope light, although a few noted the use of a small flash light. Macular function was determined by the use of two points of light or a combination of two or more points of light, one of them red. Occasional examiners (not surgeons) questioned the value of the two-point light test. There was no uniformity or standardization of methods of making these tests or of terminology of reporting results.

The various terms used to describe light projection and the number of cases described by each term are listed in Table 1. Table 2 gives similar data with regard to reporting of macular function.

TABLE 1.—*The various terms used in recording light projection and the number of cases described by each term*

Measured in degrees	186	Limited	2
Full	138	Questionable	4
Normal	35	Uncertain, faulty or impaired	3
Good	27	Nasal defect	1
Accurate	4	Not sufficient	1
Excellent	4	No report	83
Satisfactory	6		
Fair	5		
Restricted	2	Total	500

TABLE 2.—*Terms used to record macular functions and the number of cases described by each*

Distance between two lights when separation was first recognized. (No indication as to distance the lights were from eyes)	162	Prompt	9
Distance between two lights when separation was first recognized, together with the distance from the eyes	116	Fair	6
Good	34	Poor	8
Normal	30	Doubtful, questionable or uncertain	9
Satisfactory	8	Defective	1
Present	6	Two lights horizontal	1
Excellent	7	Measured in degrees	6
Positive	4	1-2-4° red and white	39
		Separation of red and white	21
		Impossible, absent, or "too dense"	17
		No report	16
		Total	500

POSTOPERATIVE VISUAL RESULTS

Failure to improve vision (Table 3) occurred in 25 of the 500 cases. Twelve of the failures were owing to ocular complications occurring at or subsequent to operation (Table 4). Preoperative determinations of macular function and light projection in these 12 cases were not pertinent to the final outcome.

Thirteen of the failures (Table 5) were owing to pathologic conditions that apparently were present before operation. Four of the patients had glaucoma. Macular function and light projection were not recorded in one case and were recorded as "good" or "normal" in two cases. They were described by measurements in only one case (Case 24) but the two-point light differentiation at 10 mm. without indication of the distance from the eye provided no information upon which to estimate the extent of functioning retina in the macular area. Light projection, reported as 125° in that case, should indicate only moderate restriction of the visual fields. However, postoperative findings did not substantiate this. Visual acuity before operation was 20/100; after operation there was light perception only. It is possible that this reduction in vision could be attributed to the surgical procedure.

TABLE 3.—*Data on operations considered failures*

Case No.	Age	Visual Acuity		Pathologic Condition*		Macular Function**	Light Projection†
		Preop.	Postop.	Postop. Eye	Preop. Systemic		
1	82	1/200	5/200	670	74	1 inch	80°
2	64	H.M.	3/200	620	72	Normal	Normal
3	89	L.P.	No L.P.	130		Normal	80°
4	79	20/200	20/200	660		5 mm. at 2 ft.	130°
5	75	L.P.	L.P.	420	72	‡R&W 1-2-4°	Good
6	71	L.P.	No L.P.	110			
7	72	20/400	20/400	110		Normal	Normal
8	74	H.M.	L.P.	121		Normal	70°
9	68	L.P.	L.P.	650		2 cm.	Full
10	86	L.P.	L.P.	420		Normal	Normal
11	67	H.M.	L.P.	420-110		3 cm.	Full
12	77	L.P.	L.P.	Died		Good	Good
13	64	L.P.	L.P.	640			
14	72	L.P.	No L.P.	330		Good	Good
15	69	L.P.	L.P.	110		Good	Normal
16	81	H.M.	H.M.	670	74	2 lts. horizontal	
17	71	C.F.	No L.P.	650	72-74	Present	80°
18	60	L.P.	L.P.	640	72	No	120°
19	77	L.P.	L.P.	420	72-74	Present	
20	79	L.P.	C.F.	670		Good	
21	67	L.P.	L.P.	650		3 inches	120°
22	62	10/200	L.P.	640		1 cm.	100°
23	69	L.P.	L.P.	650		5 cm.	130°
24	71	24/100	L.P.	110		10 mm.	125°
25	64	20/200	L.P.	Epithelial Ingrowth		1 cm. at 1 m.	Normal

*Numbers under columns headed "Pathologic Condition" are in accord with the Standard Classification of Causes of Blindness published by the Federal Security Agency: 110=Glaucoma, 130=Panophthalmitis, 121=Myopic choroidal degeneration, 420=Iridocyclitis, 330=Corneal ulcers, 620=Retinitis, 630=Choroiditis, 650=Choroidal hemorrhage, 660=Retinal degeneration, 670=Arteriosclerotic retinitis, 710=Optic atrophy, 72=Diabetes, 74=Arteriosclerosis.

Abbreviations: HM=Hand motion. CF=Count fingers. LP=Light perception.

‡Measured by simple method explained in text, page 47.

†Compass of visual field within which the direction of points of light held before the eye can be seen.

**Macular function was described by a variety of terms, many of them inexact and difficult to interpret.

Three failures were owing to preexisting retinal detachment. In one of these (Case 13, Table 5) neither macular function nor light projection was recorded. In another (Case 18) there was no macular function present before operation but there was a light projection field of 120°. The patient had diabetes. The prognosis was doubtful, but operation was resorted to in light of the extreme handicap of the individual. In the third case of retinal detachment (Case 22) macular function was reported as "two-point light discrimination at 1 cm." As the distance of the light from the eye was not stated, there is no information upon which to estimate the extent of functioning retina in the macular area. Light projection was recorded as 100°. Visual acuity before operation was 10/200; after operation, light perception only.

In three cases failure was owing to arteriosclerotic retinitis. In two of these the internist diagnosed widespread arteriosclerosis in the preoperative report. In only one of these cases (Case 1, Table 5) was an effort made to record a precise estimate of macular function. The report of "two-point light discrimination at 1 inch" is again inadequate. The statement "two light horizontal" has no precise significance. Apparently "good" in the third case was inaccurate.

Diabetic retinitis was the cause of failure in one case (Case 2). Macular function and light projection were recorded as normal. It is possible that retinal lesions developed between the date of the presurgical examination and the final refraction.

In another case (Case 4) failure was owing to retinal degeneration. Visual acuity before and after operation was 20/200. The postoperative report indicated senile macular degeneration. The patient, 79 years of age, had other symptoms of senile mental degeneration. The measured distance of two point light discrimination was 5 mm. at 2 feet from the eye, and light projection of 130° was recorded. This was the basis of a good prognosis. In this case six months intervened between the preoperative and the postoperative reports. Progress of the retinal lesion during that interval is a probability.

One failure was owing to myopic choroiditis (Case 8). The patient, aged 74, could see hand motions before operation and had light perception postoperatively. Macular function was recorded as "normal" and light projection as 70°. The estimate of "normal" was not substantiated by the postoperative results.

In these 13 failures it would appear that the preoperative record did not accurately state macular function. In the only case in which there seemed to be an accurate and complete record of preoperative findings (Case 4) failure to improve vision was owing to progress of systemic disease in addition to the ocular condition. Question is raised as to whether a more scientific method of estimating and recording macular function would have influenced the appraisal of prognosis in these cases.

Table 6 lists 28 cases in which visual acuity was improved to 20/200 or less. A prognosis of "questionable" based upon impaired two-point light discrimination and, in three cases, impaired light projection, was substantiated in nine of these cases (Nos. 4, 6, 9, 10, 13, 14, 20, 21, and 22). In Case 4, "very poor" macular function was recorded. Postoperative examination revealed chorioretinitis; visual acuity was 10/200. In Case 6 two-point light discrimination at 18-inch separation was recorded, but the distance of the light from the eye was not indicated. This was the basis of a questionable prog-

TABLE 4.—*Failures owing to postoperative complications*

Case No.	Age	Visual acuity—Preop.	Visual acuity—Postop.	Pathologic Condition*—Eye	Pathologic Condition*—Systemic Preop.
9	68	L.P.	L.P.	650	.....
17	71	C.F.	No L.P.	650	.....
21	67	L.P.	L.P.	650	72-74
23	69	L.P.	L.P.	650	.....
5	75	L.P.	L.P.	420	.....
10	86	L.P.	L.P.	420	72
11	67	H.M.	L.P.	420	.....
19	77	L.P.	L.P.	420	72-74
14	72	L.P.	No L.P.	330	.....
25	64	20/200	L.P.	Epithelial ingrowth	.....
3	89	L.P.	No L.P.	130	.....
12	77	L.P.	L.P.	.....	.....

*See Table 3 for explanation of code numbers.

Abbreviations: LP=Light perception. CF=Count fingers. HM=Hand motion.

TABLE 5.—*Failures owing to ocular disease present before operation*

Case No.	Age	Macular* Function	Light Projection**	Visual Acuity—Preop.	Visual Acuity—Postop.	Pathologic Condition†—Eye	Pathologic Condition†—Systemic
6	71	.....	.....	L.P.	L.P.	110	
7	72	Normal	Normal	20/400	20/400	110	
15	69	Good	Normal	L.P.	L.P.	110	
24	71	10 mm.	125°	20/100	L.P.	110	
13	64	.....	.....	L.P.	L.P.	640	
18	60	No	120°	L.P.	L.P.	640	72
22	62	1 cm.	100°	10/200	L.P.	640	
1	82	1 inch	80°	1/200	5/200	670	74
16	81	2 light horizontal	.....	H.M.	H.M.	670	74
20	79	Good	.....	L.P.	C.F.	670	
2	64	Normal	Normal	H.M.	3/200	620	72
4	79	5 mm. at 2 feet	130°	20/200	20/200	660	
8	74	Normal	70°	H.M.	L.P.	121	

†See Table 3 for explanation of code numbers.

**Compass of visual field within which the direction of points of light held before the eye can be seen.

*Macular function was described by a variety of terms, many of them inexact and difficult to interpret.

Abbreviations: LP=Light perception, HM=Hand motions.

TABLE 6—Cases in which visual acuity was improved to 20/200 or less

Case No.	Visual Acuity Preop.	Visual Acuity Postop.	Pathologic Condition* Postop. Eye	Pathologic Condition* Preop. Systemic	Macular Function**	Light Projection†	Preop. Prognosis
1	L.P.	20/200	.....	....	5 cm. at 1 m.	110°	
2	L.P.	20/200	710	74	1 inch at 20 feet	Full	
3	L.P.	20/200	630	....	Present	Full	
4	L.P.	10/200	630	....	Very poor	90°	Questionable
5	H.M.	20/200	670	....	½ cm. at 1 m.	100°	
6	L.P.	20/300	660	....	18 inches		Questionable
7	H.M.	10/200	630	....	1 cm.	Good	
8	L.P.	20/200	620	....	1 cm.	120°	
9	H.M.	20/200	660-91	....	1-2-4° R&W	20°	Questionable
10	L.P.	3/200	.....	....	W&W 3 cm. at 13 inches	Full	Questionable
11	L.P.	20/400	620-72	....	Good	Fair	
12	H.M.	20/200	620	....	Good	Good	
13	H.M.	20/200	110	....	Uncertain	Restricted	Questionable
14	H.M.	20/200	640	....	Uncertain	Uncertain	Questionable
15	L.P.	20/400	630	....	Satisfactory	Satisfactory	
16	L.P.	20/400	.....	....	5 cm. at 1 m.	110°	
17	H.M.	20/200	670	....	.....		
18	L.P.	20/200	670	....	1 inch at 1 m.	Good	
19	L.P.	20/300	110	....	2 cm. at 1 m.	Full	
20	L.P.	20/200	620-72	....	2-4° R&W	Full	Questionable
21	L.P.	10/200	340	....	Impaired	Good	Questionable
22	L.P.	20/200	.....	....	No	80°	Questionable
23	L.P.	5/200	670	74	.....	80°	
24	H.M.	10/200	670	74	Normal	110°	
25	H.M.	20/200	121	....	3 cm.	90°	
26	L.P.	20/400	620	72	Normal	Normal	
27	H.M.	8/200	630	....	1 inch at 1 foot	90°	
28	C.F.	10/200	660	....	1 cm. at 1 m.	130°	

*See Table 3 for explanation of code numbers.
†Compass of visual field within which the direction of points of light held before the eye can be seen.
**Macular function was described by a variety of terms, many of them inexact and difficult to interpret.
Abbreviations: LP=Light perception, HM=Hand motions, CF=Count fingers.

nosis. After operation visual acuity was 20/300, and retinal degeneration was noted.

Macular function was described as "1-2-4° red and white"† in Case 9, and light projection was limited to 20°. Postoperative examination revealed retinitis pigmentosa. Central visual acuity was 20/200. The restricted field was diagnosed before operation.

In Case 10 two-point light discrimination was recorded as "3 cm. at 13 inches" and light projection as "full field." Prognosis was questionable. Postoperative visual acuity was 3/200 with no ocular pathologic condition to account for the impairment. The patient was well satisfied with the improvement.

In Case 13 "uncertain" macular function and "restricted" light projection were recorded preoperatively. After operation, visual acuity was 20/200 and glaucoma was present.

Macular function and light projection were recorded as "uncertain" in Case 14. Detached retina was noted on postoperative examination. Central visual acuity was 20/200.

In Case 20 macular function was recorded as 2-4° red and white, and light projection as "full fields."

†This description of function and the method used to determine it are explained later in this presentation.

Impaired macular function was verified by the postoperative examination in which diabetic retinitis was noted.

Impaired macular function and good light projection were recorded in Case 21. Postoperative vision was 10/200. Corneal dystrophy was noted. In Case 22 inability to make two-point light discrimination was recorded, and the light projection field was 80°. Prognosis was questionable. Postoperative visual acuity was 20/200 and there was no apparent pathologic condition of the eye to account for the impaired vision.

Two-point light discrimination was recorded in Cases 7, 8 and 25 but the distance of the light from the eye was not stated. In those cases lesions in the fundus were observed after operation.

In two cases (17 and 23) no estimate of macular function was recorded. Arteriosclerotic retinitis was noted after operation and in both the visual acuity was less than 20/200.

In the other 14 cases in which visual acuity was not improved to more than 20/200 the preoperative prognosis was good, based upon either a specified measured two-point light discrimination at a specified distance or a statement that it was "good," "present," "normal," or "satisfactory." However, fundal disease was noted at postoperative examina-

tion. Here, again, would a better estimate of macular function have contributed to a more accurate appraisal of prognosis?

Pathologic change involving the fundi was noted at postoperative examination in 34 cases in which visual acuity was better than 20/200. In one of those cases the preoperative report indicated "poor" macular function. After operation visual acuity was 20/100 and the presence of retinitis was noted. Macular function was not reported in one of the cases but in all of them visual acuity was better than 20/200 and visual fields were greater than 20° after operation. The various pathologic conditions noted at postoperative examination and the incidence of each were as follows: Arteriosclerotic retinitis, 10; diabetic retinitis, 6; choroiditis, 6; retinal degeneration, 5; glaucoma, 3; myopic choroidal degeneration, 2; optic atrophy, 2.

In 32 of these 34 cases (the two exceptions were previously noted) a satisfactory measured macular function or a description of it as "normal," "good," or "satisfactory," was recorded. This would indicate that present tests for macular function and light projection do not supply adequate indication of the presence of fundal lesions.

Does the absence of two-point light discrimination contraindicate operation? Table 7 lists the postoperative results in 16 cases in which the preoperative report indicated that the patient did not have two-point light discrimination. In all but three cases, however, good light projection was present. In Case 2 (Table 7) light projection was recorded as "inaccurate," and in Cases 10 and 11 it was not recorded. In only one of the 16 cases did operation fail to restore useful vision. In that case, "good light

TABLE 7.—*Postoperative results in cases in which no macular function was present*

Case No.	Macular Function**	Light Projection†	—Visual Acuity— Preop.	Postop.	Ocular Disease*
1	No	Good	L.P.	L.P.	640
2	No	Inaccurate	L.P.	20/40	
3	Absent	Accurate	L.P.	20/200	
4	No	95°	L.P.	20/50	670
5	No	80°	L.P.	20/200	
6	No	140°	L.P.	20/60	
7	No	80°	H.M.	20/70	670
8	No	65°	L.P.	20/30	
9	Doubtful	60°	H.M.	20/70	670
10	Too Dense	.....	L.P.	20/20	
11	Negative	.....	L.P.	20/30	630
12	No	90°	L.P.	20/30	
13	No	Full	L.P.	20/25	
14	No	140°	L.P.	20/25	
15	No	120°	H.M.	20/20	
16	No	120°	L.P.	20/50	

*See Table 3 for explanation of code numbers.

†Compass of visual field within which the direction of points of light held before the eye can be seen.

**Macular function was described by a variety of terms, many of them inexact and difficult to interpret.

Abbreviations: LP=Light perception, HM=Hand motions.

TABLE 8.—*Data on 60 cases in which function of retina was determined preoperatively by "1-2-4° red and white" test (Details of test, page 47)*

Case No.	Macular Function	Light Projection*	—Visual Acuity— Preop.	Postop.	Ocular and Systemic Disease*
1	1-2-4° R&W	Full	3/200	20/30	
2	1-2-4° R&W	Full	C.F.	20/25	
3	1 cm. R&W	Full	3/400	20/20	
4	1-2-4° R&W	Full	20/200	20/60	
5	R&W at 3 cm.	Full	1/200	20/30	
6	1-2-4° R&W	Full	C.F.	20/20	
7	1-2-4° R&W	Full	L.P.	20/30	
8	1-2-4° R&W	Full	H.M.	20/20	
9	1-2-4° R&W	Full	C.F.	20/20	
10	1-2-4° R&W	Full	L.P.	20/50	
11	1-2-4° R&W	Full	H.M.	20/20	
12†	1-2-4° R&W	Restricted	L.P.	20/100	
13	R&W at 3 cm.	Limited	L.P.	20/30	
14	1-2-4° R&W	Full	6/200	20/40	
15	1-2-4° R&W	Full	C.F.	20/20	
16	R&W at 3 cm.	Full	L.P.	20/50	
17	1-2-4° R&W	Full	H.M.	20/20	
18	R&W at 3 cm.	Full	L.P.	20/25	
19	1-2-4° R&W	Full	1/200	20/30	
20	1-2-4° R&W	Full	H.M.	20/30	
21	1-2-4° R&W	Full	2/200	20/25	
22	R&W at 3 cm.	Full	H.M.	20/30	
23	1-2-4° R&W	Full	C.F.	20/20	
24	1-2-4° R&W	130°	L.P.	20/60	
25†	1-2-4° R&W	20°	H.M.	20/200	660-91
26	1-2-4° R&W	Full	3/200	20/40	
27	R&W at 1 cm.	Full	L.P.	20/25	
28	1-2-4° R&W	Full	L.P.	20/30	
29	1-2-4° R&W	Full	L.P.	20/20	
30	1-2-4° R&W		L.P.	20/30	660
31	2-4° R&W	Full	H.M.	20/20	
32	R&W at 4 cm.	110°	L.P.	20/25	
33	R&W at 3 cm.	Full	1/200	20/40	
34	1-2-4° R&W	Good	L.P.	L.P.	420-72
35‡	1-2-4° R&W	Impaired Upper & Temporal	3/200	5/200	121-640
36	1-2-4° R&W	Full	2/200	20/20	670
37	1-2-4° R&W	Full	2/200	20/20	
38†	2-4° R&W	Full	L.P.	20/200	620-72
39	1-2-4° R&W	Full	L.P.	20/25	
40	1-2-4° R&W	Full	10/200	20/20	
41	R&W at 3 cm.	Full	H.M.	20/20	
42	1-2-4° R&W	Full	5/200	20/20	
43†	1-2-4° W only	Full	L.P.	20/200	660
44	R&W 3 cm.	Full	L.P.	20/25	
45	1-2-4° R&W	Full	1/200	20/50	620-72
46	R&W 3 cm.	Limited	H.M.	20/20	
47	1-2-4° R&W	Full	H.M.	20/25	
48	R&W 3 cm.	Full	H.M.	20/70	
49	R&W 3 cm.	120°	2/200	20/20	
50	R&W 3 cm.	Full	H.M.	20/25	
51	R&W 3 cm.	Full	3/200	20/20	
52	R&W 3 cm.	Full	16/200	20/50	630
53	R&W 6 cm.	Full	20/200	20/20	630
54	R&W 3 cm.	Full	1/200	20/30	
55	R&W 3 cm.	Full	H.M.	20/20	
56	1-2-4° R&W	Normal	20/200	20/50	
57	1-2-4° R&W	Normal	H.M.	20/20	
58	1-2-4° R&W	110°	L.P.	20/30	
59	1-2-4° R&W	Full	H.M.	20/50	
60	R&W 3 cm.	Full	1/200	20/30	

*See Table 3 for explanation of code numbers.

Preoperative Prognosis: †Questionable. ‡Poor.

Abbreviations: LP=Light perception, HM=Hand motions, CF=Count fingers.

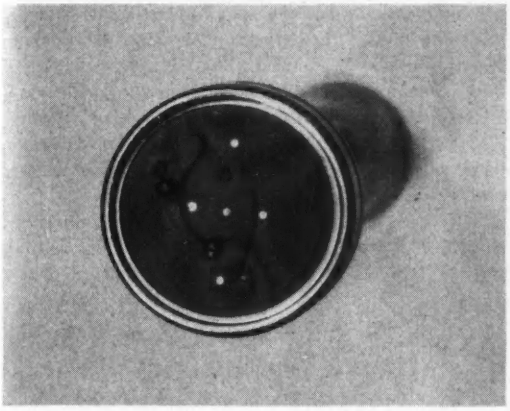

Figure 1.—Simple device for determination of macular function and compass of light perception. A perforated disc with a shutter so hinged that some of the holes can be occluded as necessary, it is mounted over the lens of a flashlight.

projection" was reported before operation, but retinal detachment was noted postoperatively and visual acuity remained as it was before. Visual acuity in two cases (3 and 5) was improved to only 20/200. No pathologic condition to which the limited result could be ascribed was noted in either of them.

The results would indicate that the absence of two-point light discrimination when light perception and good light projection are present does not foreclose hope that useful vision can be restored.

Does a more precise examination of macular function and light projection supply information upon which a more reliable prognosis can be established? Table 8 lists 60 cases in which beams of white and red light were used to establish an angular measurement of functioning retina. The equipment and methods of procedure will be described later in this discussion.

In one case (Case 34, Table 8) in which the preoperative prognosis was good the operation failed, owing to the development of iridocyclitis postoperatively. The patient was diabetic. Visual acuity both before and after operation was "light perception." Red and white discrimination of 1-2-4° was reported in Case 25, but light projection was limited to 20°. The prognosis was stated as "questionable" and the result showed that the doubt was warranted; visual acuity was improved to only 20/200 and retinitis pigmentosa was diagnosed postoperatively. Red and white discrimination was only 2-4° in Case 38. Light projection was described as "full field." Postoperative examination revealed diabetic retinitis. Visual acuity was 20/200. In Case 43 there was 1-2-4° white light discrimination but no recognition of red. Retinal degeneration was noted at postoperative examination. Visual acuity was 20/200.

In Case 35 the patient had 1-2-4° red and white light discrimination but impaired light projection in the upper and temporal fields and the prognosis was deemed poor. The patient insisted upon operation. Upon postoperative examination myopic chorioiditis was noted. Two years later retinal detachment occurred. The patient in Case 12 had 1-2-4° red and white discrimination with restricted light projection fields. The prognosis was "questionable." Visual acuity after operation was 20/100 and no definable retinal lesions were noted.

The prognosis was good in 55 of the 60 cases in which angular measurement of macular function, color discrimination tests and careful delineation of light projection fields were carried out. In 54 of them useful vision was present at the time of postoperative examination. The one failure was owing to postoperative iridocyclitis.

SIMPLE PROCEDURE TO DETERMINE EXTENT OF FUNCTIONAL RETINA

When the program for visual rehabilitation was first started in 1940, the State Ophthalmologist was called upon to examine applicants for removal of cataracts in all 58 counties of the state. Portable equipment designed to facilitate and simplify the examination wherever possible without sacrificing accuracy became necessary. The expense involved in transportation of the patient to the surgical centers made the preoperative prognosis of major importance. A simple, standardized test to investigate and record macular function and light projection was essential. Descriptions of the "home made" equipment used in making the preliminary examinations were soon requested by the cooperating ophthalmologists. Later, Parsons Optical Laboratories, 518 Powell Street, San Francisco, made the equipment available to the profession.

The method and the equipment combine the use of red and white beams of light in accord with the suggestions of Fuchs and Duke-Elder. A bakelite disc perforated by five holes is placed over the lens of a flashlight of convenient size (Figure 1). The light is designed for use at 13 inches from the eye. All the holes are 1 mm. in diameter and are so placed as to subtend an angle of 1°, 2°, and 4° when held 13 inches from the eye. The central hole has a red cover. Six millimeters on each side of the central red light are holes that transmit white light. Two holes are placed 12 mm. from the red on an axis of 90° from the line connecting the two white light openings and the red light opening previously mentioned. The distance for 1° at 13 inches is arrived at by using the natural tangent of 1° (.01746) multiplied by the distance, 13 inches (333 mm.). This equals 5.8141 mm. Six millimeters

is the nearest practical measurement for construction purposes. The distance of 12 mm. is derived in the same manner. An occluder is so mounted on the disc as to enable the operator to occlude all white lights when desirable. An ordinary pencil flashlight with a black hood perforated by a hole 0.5 mm. in diameter is used as an accessory light to determine the light projection. In use the light with all holes open is held 13 inches from the eye in a dark room. If the patient readily recognizes the one red and four white lights, the record is entered as "1-2-4° red and white light discrimination." This would indicate functioning retina, 1°, 2°, and 4° from fixation. Inability to recognize red or the 1° light may indicate impaired macular function. Inability to recognize any of the lights may indicate a cataract too dense to transmit individual rays of light. In this condition the occluder is adjusted to close the four white openings. The red is then used for fixation and the accessory light is used to determine the minimum distance of separation at which two lights are recognized. This is recorded as red and white at the distance between the two lights. Example: Red and white at 4 cm. The red light is also used for fixation, and the accessory light is used in determining the extent of the light projection fields.

This equipment has proven useful, it is inexpensive, and the results obtained are more reliable than some of those obtained by more elaborate procedures.

727 West Seventh Street.

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CASE REPORTS

- **Tetanus: Two Cases in Immunized Persons**
- **Paroxysmal Tachycardia in Early Infancy**

Tetanus: Two Cases in Immunized Persons

ELVIN C. HEDRICK, M.D., *Fort Orchard, Wash.*

THE EFFICACY OF IMMUNIZATION against tetanus is well established and the value of the procedure is attested by both the military experience of World War II and by the rarity of reports of cases occurring among immunized civilians. As with any valuable procedure it is desirable to recognize its limitations as well as its full field of usefulness.

It has been shown that either three injections of fluid toxoid, as used by the army, or two injections of alum precipitated toxoid, as used by the navy, produce effective immunity.[3, 4] It has also been demonstrated that an injection of a combination of tetanus toxoid, diphtheria toxoid, and killed Hemophilus pertussis organisms gives protective levels of tetanus antitoxin, even though the injections be carried out early in the first year of life, if the usual three injections are given at four-week intervals.[5]

Since the level of circulating antibody gradually decreases in the peripheral blood, it might be expected that tetanus would occur in attenuated form several years after immunization. It might also be expected that in some cases of overwhelming infection even large amounts of circulating antibody would not be adequate to give protection. The following two cases are illustrative in that in the first case immunization had been carried out nine years before and the patient had a mild onset suggestive of attenuation, and in the second a compound comminuted digital fracture was a likely source of overwhelming infection.

CASE 1: A 45-year-old repairman entered the hospital on November 3, 1951 complaining of severe pains in the legs. Illness had begun four days before with headache, fever, malaise, and prostration. Later stiffness of the neck and pain in the back developed, then photophobia, nausea and vomiting. On the day of entry several spasms of the calf and abdominal muscles commenced and were the most disturbing symptoms. The patient had intense thirst, but drinking water caused vomiting and a squeezing sensation in the throat. He complained of tightness in the muscles of the chest.

The patient had had routine tetanus immunization in the army in 1942 but no later booster injections. He was discharged from the army because of cardiac arrhythmia. His work at the time of the present illness consisted of repairing fixtures, window screens, and the like and of burning trash at a sanitarium for elderly patients.

When examined upon admittance the patient was almost crying at times from painful cramps in the legs. The temperature was 98 degrees F., the pulse rate 90 and respirations 26 per minute. Pupillary reactions and extraocular muscles were normal. The ears, nose and throat were essentially normal. There was no facial weakness and no trismus. A low-pitched diastolic murmur was present over the mitral area. The left border of the heart was at the midclavicular line in the fifth interspace. The lungs were clear.

Occasional clonic contractions of the abdominal wall were noted but between contractions the abdomen was soft and no organs were palpable. There was moderate spasm of the back and the patient exhibited a tripod sign when requested to sit. Pronounced, long-sustained tonic contractions of the gastrocnemius were observed bilaterally. No weakness was apparent. The deep tendon reflexes were symmetrical and hyperactive. On the legs were many healing abrasions and small pigmented areas but no single significant wound.

The hemoglobin content of the blood was 15 gm. per 100 cc. Leukocytes numbered 14,200—75 per cent polymorphonuclear cells. One cubic centimeter of Benedict's solution was not reduced with seven drops of spinal fluid, but three drops of fluid that was withdrawn the following day reduced the solution. There were no cells in either of the specimens of spinal fluid and results of Pandy tests were consistently negative. Auricular fibrillation was noted in an electrocardiogram. Administration of 10 cc. of 10 per cent calcium gluconate had no effect on the spasms. The spasms and meningismus persisted for the next two days and it was noted the cramps were produced by massaging the gastrocnemius. The patient vomited several times.

The third hospital day the cramps increased in severity and intercostal spasms caused respiratory embarrassment. The affected muscles did not relax fully between spasms. Tetanus was diagnosed and it was assumed that the infecting organism had entered through one of the numerous splinter cuts and abrasions on the lower extremities. The patient was given 200,000 units of tetanus antitoxin, 40,000 units of it intravenously. Chloral hydrate was given to control the contractions. Tolserol® was tried but when it was given intravenously the patient experienced general warmth, local aching at the site of injection and increase in contractions after the injection of 1 gm. over a ten-minute period. He was unable to retain the drug by mouth.

The contractions were well controlled with chloral hydrate except for three days from November 10 to 12 when there were several episodes of severe back spasm with opisthotonos and intercostal spasm with apnea for nearly one minute. The abdomen was soft during these episodes which were not well controlled by either Tolserol or chloral hydrate. The blood pressure remained at 120 mm. of mercury systolic and 70 mm. diastolic. There was no sign of cardiac failure at any time. After November 13 the patient improved gradually and continuously. On November 22 when he was transferred to a private hospital for convalescence the pains in the legs were subsiding and contractions had ceased.

CASE 2: A 10-year-old Caucasian male entered the hospital on September 16, 1951, with a history of having cut

*From the Communicable Diseases Division of the Los Angeles County Hospital, Service of Dr. A. G. Bower.

the left forefinger on a power-driven lawnmower 15 days before. The immediate treatment had consisted of cleansing, suturing and administration of penicillin. No tetanus toxoid nor antitoxin was given at the time of injury. Two days before admittance to hospital the patient complained that he was unable to open his mouth fully. On the day of entry he was noted to have a spastic gait but there had been no convulsions or tetanic contractions. The patient had received three injections of tetanus toxoid in early childhood and since had had one booster.

On examination moderate trismus was noted. The neck was supple and abdomen relaxed. The temperature was 99 degrees F. A dirty wound was present on the left index finger. The deep tendon reflexes were all hyperactive. A compound comminuted fracture of the distal phalanx of the left index finger was noted upon roentgen examination.

The finger was amputated through the distal one-third of the proximal phalanx and Clostridium tetani grew on culture of material from the wound in the amputated finger. The patient was given 160,000 units of tetanus antitoxin intramuscularly and 40,000 units intravenously. He also received 3,000,000 units of penicillin daily. Chloral hydrate, 1.2 gm. (20 grains) every two to four hours, controlled the contractions during the first three days. Then four severe contractions occurred and the dosage of chloral hydrate was increased to 1.5 gm. every two hours. On the sixth day thick mucus formed in the larynx, and when suction was applied contractions occurred. The temperature was 102 degrees F. On the eighth hospital day the patient was being given 1.0 gm. of chloral hydrate every two hours and there were a few mild contractions. On the ninth day a maculopapular rash and moderate general edema developed. Procaine intravenously and Benadryl® were given for the serum reaction. The edema and rash were clearing on the sixteenth hospital day but at this time more thick secretions formed in the throat and suction again caused contractions. Tracheotomy was carried out. Respiration was at first satisfactory but later in the day it became necessary to put the patient in a Drinker-Collins respirator. The temperature the next day was 101 degrees F.

When he was taken out of the respirator for a short interval eight days later (October 9), clonic contractions and generalized shaking occurred. The left arm was spastic. A lumbar puncture was done and 5 cc. of xanthochromic fluid was removed. On October 12 the patient had convulsions almost constantly even though deeply sedated with chloral hydrate. Finally he was given Tolserol® by mouth 1.0 gm. every 30 to 60 minutes for four hours with fairly good control. The dosage was then reduced to 1.0 gm. every two hours. After October 15 there were only a few mild contractions. However, the patient continued to have episodes consisting of conjugate deviation of the head and eyes to the left along with athetoid movements of the upper extremities as sedation began to wear off.

On October 23 he was removed from the respirator and when the pulse rate became rapid after three hours he was returned to it. Two days later he was removed again without incident. The patient then was in a poor nutritional state and there was a large decubitus ulcer over the sacrum. At first unresponsive and unable to feed himself, he gradually became more alert and in a few days had a ravenous appetite. On October 30 the pulse became rapid and irregular. Frequent ventricular premature systoles were noted on an electrocardiogram. The condition was controlled with procaine-amide which was given for two weeks. Aside from this interruption the course was one of steady improvement after the patient left the respirator. An electroencephalograph made November 14 showed no significant abnormalities. At the time of discharge November 23 the patient was alert, had normal intelligence, and no paralysis.

DISCUSSION

It is obvious that "immunization" did not prevent these two cases of tetanus. Some of the reasons are equally apparent but are worthy of emphasis to help prevent similar failures in the future.

In the first case nine years had elapsed since the first series of injections and no boosters had been taken in the interim. Bigler[1] was able to demonstrate tetanus antitoxin in all of the children he tested up to ten years after the initial immunization procedure. However, Boyd[2] observed that the speed of response to a booster injection of toxoid is slower in most instances if the booster is given more than four years after the initial series. By the same token the antibody response to infection should be less after that period of time. On this basis it would be indicated to give boosters every four to five years to anyone subject to frequent injuries, however minor.

A second observation which may be made from the first case is that the disease may be attenuated even several years following immunization. Recognition of that fact may aid in reaching early diagnosis with the attendant advantage of early therapy.

From the evidence in the second case, in which it seemed there was gross contamination from a severe wound on a finger, it would appear that the army practice of giving booster injections at the time of injury is desirable for civilian use also. In this connection it is notable that of the five reported cases in which members of the armed forces received boosters when they were wounded and later contracted tetanus, three of the patients had gunshot wounds of the foot, one had a compound fracture, and one had a crushed foot.[2] From this it appears that infected fractures are a potent source of tetanus toxin and that circulating antibodies from routine immunization may be inadequate. Appropriate surgical care of all contaminated or infected fractures is still one of the cornerstones of tetanus prophylaxis. If tetanus develops from infection at the site of a fracture, amputation is indicated as the only adequate means of dealing with the infection.

SUMMARY

Two cases of tetanus in persons who had had toxoid injections for immunization are reported. In one patient who had had immunization injections nine years previously and no booster in the interim, the disease was of attenuated nature and was not diagnosed immediately. The other apparently had received overwhelming infection at the site of a severe wound and fracture of the finger and had not been given tetanus toxoid or antitoxin at the time the wound was debrided and sutured.

Route 5, Box 482.

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Paroxysmal Tachycardia in Early Infancy

Treatment with Large Doses of Quinidine

ARTHUR J. MOSS, M.D., *Los Angeles, and*
ROBERT H. THOMPSON, M.D., *Inglewood*

THERE are reports in the literature of more than 150 cases of paroxysmal tachycardia in the pediatric age group, and the incidence is probably much greater than this figure would indicate. Etiologic factors, symptoms and prognosis are so much different in young infants than in older persons that the condition has been considered as a separate entity. Nadas and co-workers[4] indicated that this "entity" should more accurately be limited to infants four months of age or younger. In observation of 25 cases in infants of this age group they noted that in the majority of cases no etiologic factor was determined, a high proportion of the patients were boys, symptoms of congestive heart failure were usually present, and there was a low incidence of recurrence beyond one year after the initial episode.

In an earlier communication, Hubbard[2] said that the patients although desperately ill usually respond promptly to digitalis and sometimes recover even without treatment. Since that time, however, it has been recognized that in an occasional case drugs other than digitalis are needed.

REPORT OF A CASE

A boy, born normally at term after uneventful pregnancy, progressed favorably until, on the 14th day, he refused feedings, vomited and became febrile. The following day tachypnea, cyanosis and listlessness were noted. The symptoms increased in severity and the child was hospitalized.

On examination the infant was observed to be severely dyspneic, pale and listless and he appeared to be critically ill. The pulse rate was 200 per minute. No murmurs were audible. Moist rales were present at the bases of the lungs. The liver was palpable four finger-breadths below the costal margin. Considerable enlargement of the heart was noted in an x-ray film. An electrocardiogram showed supraventricular paroxysmal tachycardia with a rate of 220.

The infant was placed in an oxygen tent and 0.1 mg. of digitoxin was administered intramuscularly. This was repeated every six hours for three doses. After 14 hours there was no improvement. Quinidine was then given orally in doses of 15 mg. repeated every eight hours. After the second dose of quinidine, the paroxysm was broken. The child was discharged, remained well for two weeks, then had another paroxysm which was followed by numerous recurrences. Many subsided spontaneously but sometimes as much as 200 mg. of quinidine in a single intramuscular dose was necessary to break the paroxysm. The patient had, in all, 61 paroxysmal episodes. It was finally discovered that a maintenance dose of 64 mg. of quinidine orally every four hours was necessary to prevent paroxysms. The dosage was gradually reduced and the medication finally discontinued when the child was 14 months old. He was examined a month later and his general condition was excellent. The weight was 27 pounds, 4 ounces, and the height 32¼ inches. No cardiac abnormalities were noted upon auscultation, fluoroscopic examination or electrocardiographic tracing. There had been no paroxysms for ten months.

DISCUSSION

Although in general the prognosis for infants under four months of age who have paroxysmal tachycardia is excellent, it should be borne in mind that any of the individual attacks may result in death if not recognized and treated.

Non-specific therapy includes the use of oxygen and morphine sulfate. The latter, in doses of 1 mg. per 4.5 kg. of body weight, has a pronounced effect on restlessness and irritability. Specifically, many drugs have been employed in an effort to terminate the paroxysm. Of these, digitalis is the most effective. The optimal digitalizing dose for children under two years of age is .06 mg. of digitoxin per kg. of body weight, administered in three divided doses within 16 to 24 hours. A daily maintenance dose of one-tenth the digitalizing dose for one week or more is recommended for prevention of recurrences. In the case herein reported, more than the optimal digitalizing dose was employed without effect.

Quinidine is effective for both therapy and prophylaxis of supraventricular tachycardia.[3] The condition will not recur if a level of 1 mg. of quinidine per liter of blood is maintained. Nadas and co-workers[4] said that quinidine is the drug of choice in the treatment of ventricular tachycardia. They recommended a dosage schedule of 100 mg. every three hours by mouth for five doses or until paroxysm stops. They used the drug only for older children. In the past, quinidine has been employed infrequently and then only with great caution. Its ineffectiveness in some cases undoubtedly is attributable in part to insufficient dosage.[1] It is unfortunate that the toxic effects of so valuable a drug have been overemphasized. Katz[3] stated that the only contraindication to the use of quinidine is idiosyncratic reaction to the drug. It may be given orally or intramuscularly in the same dosage. Intravenous administration is dangerous and rarely necessary. The dosage should be determined by clinical trial. In the case herein reported, as much as 200 mg. was administered in a single dose after lesser amounts had been found ineffective. The patient was maintained on the drug constantly for 12 months.

It is suggested that quinidine be administered in paroxysmal tachycardia in infancy whenever optimal doses of digitalis are ineffective. When quinidine is employed, the dosage should be increased to the point of therapeutic response provided no toxic effects result. This optimal dosage will vary with patients.

SUMMARY

1. A case of supraventricular paroxysmal tachycardia with 61 recurrences in a young infant is presented. Treatment with optimal doses of digitalis was ineffective and ultimately the patient was maintained without paroxysm for more than 12 months before the condition finally abated.

2. The treatment of this condition with emphasis on the use of quinidine is discussed.

5830 Overhill Drive.

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EDITORIAL

Prelude

Many officials of the California Medical Association were faced last month with the A.M.A. Annual Session following immediately on the heels of the C.M.A. meeting. In many instances, delegates to the A.M.A. and other physicians planning to attend the A.M.A. session in New York took off directly from the Los Angeles scene of the C.M.A. gathering.

In size and importance the state meeting is not expected to compete with the national session. However, in the light of membership and completeness of program, the California annual session need take a back seat to no one.

The Los Angeles meeting drew an attendance of more than 2,800 physicians, or about 25 per cent of the C.M.A. membership, and a total registration of over 4,000 persons. This is a new record.

Physicians attending the meeting had a selection of 157 scientific papers, covering all phases of medical and surgical care. They could visit 15 scientific and 98 technical exhibits, a display which brought from the C.M.A. Council a vote of confidence in the exhibit layout and appearance and in the exhibitors for their splendid cooperation.

In addition, the medical motion picture program, running continuously and precisely on time for hours on end, exhibited 100 films and drew large audiences at all times.

On the business side, the House of Delegates devoted two full days to the policy-making affairs of the Association. The House adopted By-Law amendments which will make Councilors-at-Large members of the House of Delegates and will provide machinery for eliminating the Interim Session in 1954 and later years if the prospective business of the meeting does not justify such a session.

Two additional By-Law amendments, one to write the Medical Services Commission into the By-Laws and the other to require United States citizenship as a prerequisite of C.M.A. membership, were rejected by the House as requiring further study.

Resolutions calling for expressions of policy were numerous and the bulk of them qualified as "emergencies" which demanded action at this session. Among those adopted by the House was one recognizing that while persons with certain technical skills can be of great aid in the practice of medicine, the possession of such skills does not per se permit them to practice medicine. Another sought to clarify the doctor draft law, another to permit smaller hospitals to be recognized for approval for internship training, and another to establish a national program of blood banking under the auspices of a top committee representing all interested parties.

Still other resolutions passed by the House of Delegates called for support of the A.M.A. committee proposal to recognize osteopathy as no longer in the cultist classification, for the treatment of non-service-connected disabilities of veterans under community resources, and for approval of the Bricker Resolution in the National Congress to limit the treaty-making powers of governmental departments or agencies.

Various of these resolutions called for introduction of similar matters before the A.M.A. House of Delegates, a procedure which was followed by the delegates to the A.M.A.

The Council, in its daily meetings during the session, voted approval of a statewide program of disability insurance for C.M.A. members, subject to further approval by the larger county medical societies. The Council also approved a budget, which was later approved by the House of Delegates, continuing annual dues for 1954 at $40 per active member.

In the annual elections, Dr. Arlo A. Morrison of Ventura was chosen as President-Elect. Dr. John W. Green of Vallejo was elevated to the presidency and

Drs. Donald Charnock and Wilbur Bailey, both of Los Angeles, were reelected Speaker and Vice-Speaker, respectively, of the House of Delegates.

For Councilors, the House chose Drs. Robert O. Pearman of San Luis Obispo, Sidney J. Shipman of San Francisco and Ralph Teall of Sacramento as representing their respective Councilor districts. For Councilors-at-Large, Dr. T. Eric Reynolds of Alameda County was elected to office and Dr. Arthur A. Kirchner of Los Angeles was reelected for a three-year term.

All incumbent delegates and alternates to the American Medical Association were reelected.

For trustees of California Physicians' Service, the House elected Drs. Leon Desimone and Merlin L. Newkirk of Los Angeles and Edwin L. Bruck of San Francisco as new members. Dr. Francis T. Hodges of San Francisco and Mr. Robert A. Hornby of the same city were reelected trustees.

The 1953 Annual Session departed from earlier precedent by scheduling the many activities over a period of five days. In past years a four-day session has been held but this year the longer meeting was indicated. This permitted a lapse of two days between the sessions of the House of Delegates, a hiatus which met with general approval. While the longer session posed some problems for some of the scientific sections, it is believed these difficulties can be eliminated in future meetings. Certainly, the more leisurely pace of the entire session drew most favorable comments, not only from physicians attending but from exhibitors and guests alike.

The Council has again selected Los Angeles as the place for the meeting next year. For 1955, San Francisco will be the host. The 1953 Interim Session, possibly the last of these winter meetings, will be held in San Francisco.

Thus the curtain rings down on another C.M.A. Annual Session. In many ways this meeting surpassed all earlier gatherings; in some ways it demonstrated instances in which planning may need revision. Taken as a whole, it appears to have been eminently successful from all points of view, a "postgraduate course" made easily available in a limited period of time.

The World's Greatest

THE WORLD'S greatest medical meeting was held in New York the first five days of June, when the American Medical Association staged its Annual Session before an audience of more than 20,000 physicians and another 20,000 technicians, nurses, medical students, exhibitors, guests and other collaborators.

Scientifically, the session provided more than 400 papers on all aspects of medical and surgical care, research, technique and therapy. On top of that, an entire floor of the Grand Central Palace was devoted to scientific exhibits, many of which were televised for immediate viewing and for delayed television programs. Physicians by the thousands spent countless hours in the scientific meeting rooms, the scientific exhibits and the daily television showings of medical and surgical clinics.

Other exhibits of a technical nature occupied three floors of the Grand Central Palace in the largest technical exhibit ever put together at a medical meeting. Time spent at these exhibits was voted eminently valuable by the many doctors present and even the most experienced specialists came away with new ideas on the treatment or technique of medical or surgical therapy.

The business of the meeting occupied three days for the members of the House of Delegates. Most important items coming out of the deliberations of the House concerned veterans' medical care, medical ethics and osteopathy.

At long last the House of Delegates came out boldly in recommending that the medical care provided by the government to military veterans be limited to service-connected disabilities except in cases of neuropsychiatric or tuberculous origin. All other cases, the House found, should be treated at the local community level under local auspices and in local facilities. The A.M.A. has been flirting with this policy for a number of years but has never before expressed it in such firm tones. Such a policy would be strictly in keeping with the policy of the current federal administration of recognizing states' rights and of reducing federal expenditures wherever possible.

As to medical ethics, the House received eleven resolutions dealing with ill-founded public statements emanating from one or another branch of medicine but reflecting on the integrity and ethics of the entire profession. Some of the conclusions of the reference committee on these resolutions are worthy of repetition here. The committee stated that it "believes the members of the House of Delegates have demonstrated their devotion over the years to the principles of American democracy. This devotion includes the right of free speech. With this the committee agrees unqualifiedly."

At the same time, the committee stated: "Broad generalizations, ill-advised and poorly-prepared statements that often fail to convey the intended meaning are unfortunate and are to be deplored. Destructive critical comments serve no useful purpose. Your committee has the utmost confidence that the great majority of our members are entirely

capable of avoiding these pitfalls without additional advice from this committee."

The report brought out the fact that the A.M.A. and its constituent societies provide adequate machinery for disciplining those few members who transgress ethical lines.

Greatest debate of the session was provided over the report of a special committee on the relationship between osteopathy and medicine. The report held, in brief, that the distinctions between the two today are of such nature that the present stigma of cultism is no longer applicable. On this basis, the report recommended that this stigma be removed where it might affect the services of Doctors of Medicine teaching in the undergraduate or postgraduate courses of osteopathic schools. The opening of the door to qualified teachers would then raise the educational standards of osteopaths and work toward a further elimination of scientific differences between the two groups.

After considerable deliberation the House of Delegates voted to approve the suggestion that the special committee be continued in its investigations but that no definite action be taken on its recommendations until the 1954 Annual Session. Thus the move toward rapprochement of medicine and osteopathy, started by the California Medical Association in 1941, was delayed another year, during which time the constituent medical societies will have a further chance to evaluate the research undertaken by the special A.M.A. committee.

Top offices in the A.M.A. were filled by elections in the House of Delegates. Dr. Walter B. Martin, long a member of the House of Delegates and more recently a member of the Board of Trustees, was chosen President-Elect, following Dr. Edward J. McCormick, who was elevated to the presidency. For Vice-President, Dr. Carl Gellenthien of Valmora, N. M., was elected. Other elections covered members of the Board of Trustees and several Councils of the A.M.A.

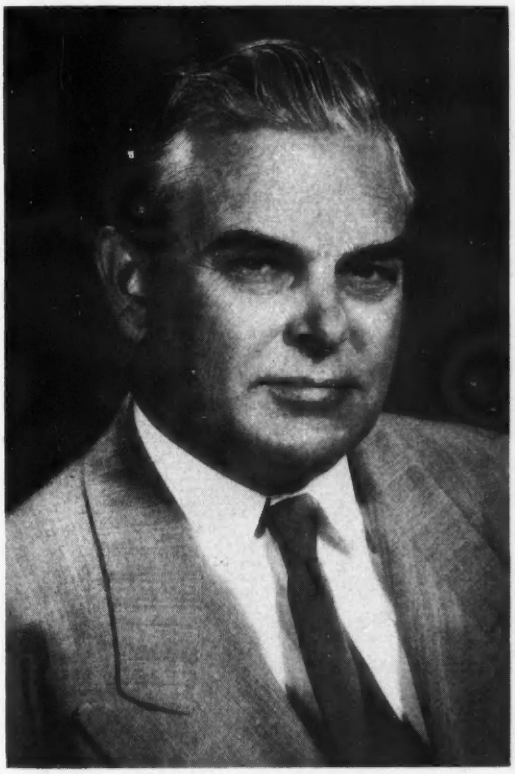
Full proceedings of the business sessions are appearing in the *Journal of the American Medical Association* and will merit reading.

In closing the world's greatest medical meeting, the size and importance of the gathering was confirmed by the decision of the Board of Trustees that only Atlantic City and San Francisco are now considered capable of handling the A.M.A. Annual Session. While Chicago and New York have shared with these cities in the past, their facilities are now found to be inadequate for further annual meetings. Thus it appears that California will be host to the A.M.A. every two or three years from now on. The 1954 session has already been scheduled for San Francisco, a gracious host in 1946 and 1950 and apparently slated for the same role often in future years.

California MEDICAL ASSOCIATION

NOTICES & REPORTS

The New President-Elect



ARLO A. MORRISON, M.D.

ONE MAN'S AVOCATION redounded to the benefit of the entire California medical profession in May, 1953, when Arlo A. Morrison of Ventura was elected President-elect of the California Medical Association at the annual session in Los Angeles. When he was questioned as to what, apart from the practice of medicine, most consumed his time, energy and enthusiasm, the new President-elect unhesitatingly gave first place to the organizational aspects of the profession.

Dr. Morrison has never tired of this avocation since becoming secretary of the Ventura County Medical Society in 1934, his third year in practice there. Coincidentally he was named a delegate to the California Medical Association—and, with the exception of six years of naval duty, his service to his colleagues in private practice has moved through increasingly broader channels.

Dr. Morrison, born in Hickman, Nebraska, November 27, 1904, was graduated in medicine at the University of Nebraska in 1928. Internship followed at Bishop Clarkson Hospital, Omaha, and at the former City Hospital, Seattle. He began general practice in Buhl, Idaho, in 1929, but shortly undertook EENT postgraduate work in Los Angeles and then established himself in that field in Santa Paula, Ventura County, in 1932.

He remained there until January, 1941. That marked the beginning of his naval career which was to include 21 months, much of it under fire, as medical officer of an attack transport squadron —the navy early recognizing his organizational and

JOHN W. GREEN, M.D. . . . . President
ARLO A. MORRISON, M.D. . . . . President-Elect
DONALD A. CHARNOCK, M.D. . . . . Speaker
WILBUR BAILEY, M.D. . . . . Vice-Speaker
SIDNEY J. SHIPMAN, M.D. . . . . Council Chairman
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DWIGHT L. WILBUR, M.D. . . . . Editor
JOHN HUNTON . . . . . Executive Secretary
General Office, 450 Sutter Street, San Francisco 8
ED CLANCY . . . . . Director of Public Relations
Southern California Office:
417 South Hill Street, Los Angeles 13 • Phone MAdison 8863

leadership abilities. Interspersed during his service were tours of duty as head of the EENT departments of both the Corona and Long Beach naval hospitals. He now holds a captain's commission in the U. S. Naval Reserve.

At the completion of his naval duties Dr. Morrison in 1946 began private practice anew, this time in Ventura. Within less than a year he was completely immersed in medical organizational work. In 1947 he was elected a councilor of the Public Health League—in the meantime having been returned to his job as secretary of the county society and delegate to the C.M.A. Then came election to the Council of the C.M.A. in 1951, followed in 1952 with a concurrent trusteeship of California Physicians' Service.

The avocational aspects become even more apparent when Dr. Morrison's additional services to the public and profession are noted. He has served on the board of directors of the Tri-Counties Blood Bank, the Ventura Chapter of the American Red Cross, and the advisory boards to the Crippled Children's Commission and the Mental Health Commission. He is a non-resident member of the Los Angeles Society of Ophthalmology and Otolaryngology and its Research Study Club. For the past three years he has been serving on the Ventura Elementary Board of Education. He resigned as president of that body upon his election to the C.M.A. presidency-elect, but continues as a board member.

Dr. Morrison is a member of the active staffs of Ventura hospitals and is a consultant to Camarillo State Hospital. Even in so busy a life as the record of service to medicine implies, the new President-elect finds time for associations in other fields. He is a member of the Rotary Club and of the American Legion.

In Dr. Morrison's record, members of the C.M.A. House of Delegates found the training, the capacity for work and the enthusiasm that make for good leadership.

PAST PRESIDENTS OF THE CALIFORNIA MEDICAL ASSOCIATION (with years of their presidency)

Left to right, seated—Lowell S. Goin, Los Angeles (1944); George G. Reinle, Oakland (1933); George H. Kress, Los Angeles (1916); Robert A. Peers, Palo Alto (1935). Standing—H. Gordon MacLean, Oakland (1951); Sam J. McClendon, San Diego (1946); Donald Cass, Los Angeles (1950); E. Vincent Askey, Los Angeles (1948); R. Stanley Kneeshaw, San Jose (1949); John W. Cline, San Francisco (1947). Other Past Presidents, not in photograph: Edward N. Ewer, Oakland (1925); Lyell C. Kinney, San Diego (1930); Junius B. Harris, Sacramento (1931); Harry H. Wilson, Los Angeles (1940); William R. Molony, Sr., Los Angeles (1942); Karl L. Schaupp, San Francisco (1943). The picture was taken at the 1953 Annual Session of the C.M.A. in Los Angeles.

Hodges Heads C.P.S. Board

DR. FRANCIS T. HODGES of San Francisco has been elected president of the Board of Trustees of California Physicians' Service by vote of members of the board. Other officers are: first vice-president, Dr. John M. Rumsey of San Diego; second vice-president, Dr. Frank A. MacDonald of Sacramento; secretary, Dr. Philip N. Baxter of Oakland; treasurer, Dr. Merlin L. Newkirk of Southgate; assistant secretary-treasurer, Dr. Leon O. Desimone of Los Angeles.

The election meeting of the Board of Trustees was held immediately following the annual meeting of the California Medical Association, May 24-28, in Los Angeles. At the C.M.A. meeting three new members of the Board of Trustees were elected by the House of Delegates of the C.M.A. They are: Dr. Edwin L. Bruck of San Francisco and Drs. Newkirk and Desimone.

The C.M.A. Council reappointed Dr. Neil J. Dau of Fresno, Dr. Ivan C. Heron of San Francisco and Dr. A. A. Morrison of Ventura to serve for a term of one year.

In Memoriam

ALLEN, JOSEPH R. Died in Los Angeles, May 1953, aged 78. Graduate of Northwestern University Medical School, Chicago, Ill., 1906. Licensed in California in 1923. Doctor Allen was a member of the Los Angeles County Medical Association, a life member of the California Medical Association, and an associate member of the American Medical Association.

✚

BARTLETT, ALEXANDER G. Died in San Francisco, May 28, 1953, aged 58, of carcinoma of the colon. Graduate of the University of California Medical School, Berkeley-San Francisco, 1926. Licensed in California in 1926. Doctor Bartlett was a member of the San Francisco Medical Society, the California Medical Association, and the American Medical Association.

✚

CASTER, JOHN L. Died in Balboa, April 2, 1953, aged 37, of coronary artery disease. Graduate of the University of Southern California School of Medicine, Los Angeles, 1944. Doctor Caster was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✚

CLECAK, NICHOLAS J. Died in Oakland, May 19, 1953, aged 61, of bronchogenic carcinoma. Graduate of Rush Medical College, Chicago, Ill., 1918. Licensed in California in 1920. Doctor Clecak was a member of the Alameda-Contra Costa Medical Association, the California Medical Association, and the American Medical Association.

✚

COATE, CHARLES R. Died in Whittier, May 28, 1953, aged 75. Graduate of the Medical College of Ohio, Cincinnati, 1907. Licensed in California in 1924. Doctor Coate was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✚

DIXON, CHESTER D. Died April 11, 1953, aged 52. Graduate of the University of Nebraska College of Medicine, Omaha, 1926. Licensed in California in 1927. Doctor Dixon was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

EAMES, EARL. Died in San Anselmo, May 1, 1953, aged 62, of coronary artery disease. Graduate of Rush Medical College, Chicago, Ill., 1917. Licensed in California in 1917. Doctor Eames was a member of the Butte-Glenn Medical Society, the California Medical Association, and the American Medical Association.

✚

GINSBURG, SAMUEL S. Died in San Francisco, May 8, 1953, aged 73. Graduate of the College of Physicians and Surgeons, Los Angeles, 1913. Licensed in California in 1913. Doctor Ginsburg was a member of the Tulare County Medical Society, the California Medical Association, and the American Medical Association.

✚

HANNAH, WARD. Died in Long Beach, March 22, 1953, aged 75. Graduate of Northwestern University Medical School, Chicago, Illinois, 1911. Licensed in California in 1919. Doctor Hannah was a retired member of the Los Angeles County Medical Association, the California Medical Association, and an associate member of the American Medical Association.

✚

HAWKINS, GEORGE G. Died in Fresno, April 16, 1953, aged 72. Graduate of the Washington University School of Medicine, St. Louis, Missouri, 1905. Licensed in California in 1906. Doctor Hawkins was a member of the Madera County Medical Society, the California Medical Association, and the American Medical Association.

✚

HOWITT, HENRY O. Died in Everett, Wash., June 8, 1953, aged 91. Graduate of the Cooper Medical College, San Francisco, 1887. Licensed in California in 1888. Doctor Howitt was a retired member of the Marin County Medical Society, the California Medical Association, and an associate member of the American Medical Association.

✚

JACOBSON, HARRY P. Died March 23, 1953, aged 65. Graduate of the College of Physicians and Surgeons, Los Angeles, 1916. Licensed in California in 1916. Doctor Jacobson was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

KREUTZMANN, HENRY A. R. Died in San Francisco, April 28, 1953, aged 63, of myocardial infarction. Graduate of the University of Pennsylvania School of Medicine, Philadelphia, 1916. Licensed in California in 1916. Doctor Kreutzmann was a member of the San Francisco Medical Society, the California Medical Association, and the American Medical Association.

✤

MARTIN, ROSS C. Died in San Bernardino, April 20, 1953, aged 64, of nephritis. Graduate of the University of Louisville School of Medicine, Kentucky, 1912. Licensed in California in 1927. Doctor Martin was a retired member of the San Bernardino County Medical Society, the California Medical Association, and an associate member of the American Medical Association.

✤

MCKEE, CHARLES B. Died in Sacramento, May 29, 1953, aged 68, of cardiac failure. Graduate of George Washington University School of Medicine, Washington, D. C., 1907. Licensed in California in 1907. Doctor McKee was a member of the Sacramento Society for Medical Improvement, the California Medical Association, and the American Medical Association.

✤

MCLARAND, KENNETH C. Died in Santa Monica, April 15, 1953, aged 47. Graduate of the State University of Iowa College of Medicine, Iowa City, 1936. Licensed in California in 1940. Doctor McLarand was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✤

MONTGOMERY, ROBERT R. Died in Long Beach, May 2, 1953, aged 68. Graduate of the University of Toronto Faculty of Medicine, Ontario, 1910. Licensed in California in 1921. Doctor Montgomery was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✤

MOORE, GERTRUDE H. Died in Oakland, May 3, 1953, aged 69, of subacute bacterial endocarditis. Graduate of the Oakland College of Medicine and Surgery, 1907. Licensed in California in 1907. Doctor Moore was a member of the Alameda-Contra Costa Medical Association, the California Medical Association, and the American Medical Association.

NEWMAN, LESTER. Died in San Francisco, April 25, 1953, aged 70. Graduate of the University of California Medical School, Berkeley-San Francisco, 1908. Licensed in California in 1908. Doctor Newman was a member of the San Francisco Medical Society, the California Medical Association, and the American Medical Association.

✤

NICHOLS, ROBERT C. Died in Ontario, March 29, 1953, aged 73, of coronary artery disease. Graduate of Northwestern University Medical School, Chicago, Illinois, 1911. Licensed in California in 1912. Doctor Nichols was a member of the San Bernardino County Medical Society, the California Medical Association, and the American Medical Association.

✤

PISCHEL, KASPAR. Died in Ross, April 9, 1953, aged 91, of acute pulmonary edema. Graduate of Leopold Franzens-Universitat Medizinische Fakultat, Innsbruck, Austria, 1886. Licensed in California in 1890. Doctor Pischel was a retired member of the San Francisco Medical Society, the California Medical Association, and an associate member of the American Medical Association.

✤

PRICHARD, MARVIN C. Died in Long Beach, May 5, 1953, aged 42, of myocardial infarction. Graduate of the University of Louisville School of Medicine, Kentucky, 1933. Licensed in California in 1949. Doctor Prichard was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✤

SILVERBERG, MORRIS H. Died in San Francisco, April 17, 1953, aged 56, of coronary artery disease. Graduate of the University of California Medical School, Berkeley-San Francisco, 1921. Licensed in California in 1921. Doctor Silverberg was a member of the San Francisco Medical Society, the California Medical Association, and the American Medical Association.

✤

TARPINIAN, HAROUTUNE A. Died in Fresno, April 28, 1953, aged 62, of cerebral hemorrhage. Graduate of the American School of Medicine of the Syrian Protestant College, Beirut, Syria, 1914. Licensed in California in 1924. Doctor Tarpinian was a member of the Fresno County Medical Society, the California Medical Association, and the American Medical Association.

NEWS & NOTES

NATIONAL • STATE • COUNTY

ALAMEDA

Dr. Judith Ahlem of Livermore was installed as president of the American Medical Women's Association at the meeting of that organization in New York last month.

LOS ANGELES

At the May 1953 election of the **Los Angeles Radiological Society,** the following officers were elected to serve for the twelve months from September 1953 through August 1954: President, Dr. Joseph F. Linsman, Beverly Hills; vice-president, Dr. M. M. Haskell, Long Beach; secretary, Dr. George Jacobson, Los Angeles; treasurer, Dr. Hubert J. Prichard, Long Beach; executive committee, Dr. Harold P. Tompkins, Los Angeles, and Dr. John Hamilton, Glendale.

* * *

Dr. Richard Thomas Barton, instructor in surgery at the University of Southern California School of Medicine, addressed the Fifth International Congress of Otolaryngology June 12 in Amsterdam, Holland, on the subject, "Neoplasms Involving the Carotid Artery."

* * *

Correction: In a news item in this section of the May issue of CALIFORNIA MEDICINE, **Dr. Clinton H. Thienes** was incorrectly identified as "director of Huntington Memorial Hospital." Dr. Thienes is director of the Institute of Medical Research of that hospital.

SAN FRANCISCO

Dr. Ernest H. Falconer, who retired from the faculty of University of California School of Medicine, San Francisco, in 1950, recently was awarded an honorary Doctor of Laws degree from McGill University, Montreal.

Dr. Falconer was graduated from McGill's Medical School in 1911.

* * *

The **gold headed cane** awarded each year to the member of the graduating class of the University of California School of Medicine who is chosen as "most outstanding" by fellow students and faculty, was presented this year to **Robert Eric Greenberg** of Berkeley. John H. Powers and Desmond S. Surfleet, both of San Francisco, were runners-up for the honor. The ceremonial presentation was made by Dr. William J. Kerr, emeritus professor of medicine.

SANTA CLARA

Mrs. Raymond T. Wayland, a past president of the Woman's Auxiliary to the California Medical Association, was elected a director of the Woman's Auxiliary to the American Medical Association at the organization's annual meeting held in New York City in June.

SANTA CRUZ

Recently organized with 21 members, the **Santa Cruz County Academy of General Practice** has applied for a charter as a component of the California Academy of General Practice. Officers of the new unit, the twentieth formed in the state, are Dr. A. H. Nittler of Santa Cruz, president; Dr. Ashby Steele of Felton, secretary.

Issuance of a charter to the Santa Cruz chapter will bring the membership of the California Academy to almost 1,700.

GENERAL

Officers of the **California Heart Association,** elected at the recent annual meeting of the organization in Los Angeles, are: President, Dr. George C. Griffith of Los Angeles; vice-president, Dr. Arthur R. Twiss of Oakland; secretary, Dr. Frederick Kellogg of Long Beach.

* * *

Exchange of information and discussion of mutual problems featured the first annual meeting of county medical society-sponsored **Bureaus of Medical Economics,** which was held in Los Angeles, May 23-24, concurrent with the California Medical Association annual session.

The meeting was attended by Mr. C. A. Catassi, Alameda County; Mr. Joseph Donovan, Santa Clara County; Mr. John A. Carnes, San Diego; Mr. Boyd Thompson, San Joaquin; Mr. Fred Gatchell, Santa Ana; and Mr. Walter F. Dickey, San Francisco. Subjects discussed were: Physician participation in the Bureau, the necessity for high calibre, well trained personnel, and collection procedures.

It was the consensus that this first meeting was beneficial to all, that it should become a yearly event, and that it should be held in conjunction with the C.M.A. annual session so that medical society executive secretaries and physicians can attend.

* * *

The second **International Congress of Cardiology** will be held in Washington, D. C., September 12 to 15, 1954. It will be immediately followed by the annual scientific sessions of the American Heart Association, September 16 to 18, 1954. A series of post-congressional visits and conferences to at least 20 of the leading cardiac clinics in different parts of the U. S. and Canada has been arranged by special committees of local Heart Associations in the various cities.

* * *

The eighteenth annual congress of the United States and Canadian sections of the **International College of Surgeons** will be held at the Waldorf-Astoria in New York, September 13 to 17.

* * *

The fourth congress of the **Pan American Medical Women's Alliance** will be held September 24 through October 1, 1953. Dr. Ina A. Marsh, 140 Linwood Avenue, Buffalo 9, New York, is registration chairman.

* * *

More than 11,000 surgeons, other physicians and guests are expected to attend the 39th annual clinical congress of the **American College of Surgeons,** the nation's largest scientific meeting primarily concerned with surgery, to be held in Chicago, October 5 through 9, 1953, according to a communication from the college.

The program will include formal scientific papers, panel discussions, symposia, postgraduate courses, surgical forums, medical motion pictures, ciné clinics, color television and exhibits.

Dr. Harold L. Foss, president of the American College of Surgeons for 1953, will preside at the opening evening session at which Dr. Fred W. Rankin, Lexington, Kentucky, will be installed as president for the year 1954. Sir James Paterson Ross of London will give the eighth Martin Memorial Lecture, entitled "Science and Surgery."

The tenth annual meeting of the **American Institute of Dental Medicine** will be held at Palm Springs, October 25 through October 29, 1953. Advance registration, according to an official announcement of the meeting, indicates that between 300 and 400 dentists and dental and medical researchers will attend. Among guest speakers will be Warren L. Bostick, M.D., department of pathology, University of California School of Medicine, San Francisco. His subjects: Dynamics of Inflammation; Cellular Reaction to Injury; The Malignant Lymphoma.

Applications may be secured by writing Miss Marion G. Lewis, executive secretary, 2240 Channing Way, Berkeley 4.

POSTGRADUATE EDUCATION NOTICES

MEDICAL EXTENSION UNIVERSITY OF CALIFORNIA

Postgraduate Courses for 1953

Obstetrical and Gynecological Conference, September 2, 3, 4. Place and fee to be announced.

Ophthalmology (for specialists), September 7 through 12. Fee $75.00. Medical Center.

Medicine for General Practitioners, September through November. East Oakland Hospital. Fee $50.00.

Evening Lectures in Medicine, September through November. Fee $50.00. Mills Memorial Hospital, San Mateo (probably).

Occupational Health, October 14, 21, 28 and November 4. Fee to be announced. Medical Center.

Contact: All inquiries to be addressed to Stacy R. Mettier, M.D., Professor of Medicine, Head of Postgraduate Instruction, Medical Extension, University of California Medical Center, San Francisco 22.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

1. What's New in Therapeutics—Wednesday, August 12.
2. Office Gynecology—Wednesday, August 19.
3. Peripheral Vascular Diseases—Wednesday, August 26.

All of these one-day symposia will be given at the U. S. Naval Hospital in San Diego, and they are being given in cooperation with the San Diego County Medical Society.

Contact: Dr. Thomas Sternberg, Office of Medical Extension, University Extension, University of California, Los Angeles 24, California.

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE

Cardiology and Vascular Disease—No. 832

Date: September 14, 1953—full time, one year.

Fee: $1,000.00.

History, physiology, pathology, diagnosis, treatment of cardiac and peripheral disease. Emphasis placed on bedside teaching, electrocardiography, fluoroscopy, and associated diagnosis aids. Designed to meet the requirements for certification by the American Board of Cardiology. Six hours of didactic lectures per week; 35 hours of laboratory work. 32 units credit for master's degree. Course Director: George C. Griffith, M.D.

Gastroenterology—No. 844

Date: September 21, 1953—Full time, one year.

Fee: $1,000.00.

Course is designed to give a limited number of qualified physicians advanced training in this field. The didactic courses will include intensive study of the physiology, pathology, as well as the clinical aspects of the diseases of the digestive tract. Clinical teaching will be done in the outpatient department of the Los Angeles County Hospital. 32 units credit for master's degree. Course Director: George K. Wharton, M.D.

Intensive Review of Internal Medicine—No. 855

Date: September 21, 1953. Applications accepted until August 1, 1953.

Fee: $50.00.

A two-week course offered for students preparing to take the examination for the American Board of Internal Medicine. Course consists of 40 hours of didactic lectures, 8:30 a.m. to 12:30 p.m., Monday through Friday. It will cover the fields of Endocrinology, Cardiology, Gastroenterology, Hematology, Arthritis, Neurology, and Isotopes. Course Director: Donald Petit, M.D.

Diagnostic and Therapeutic Radiology—No. 858

Date: Course begins by arrangement.

Fee: 3 mos.—$250.00 6 mos.—$ 500.00
9 mos.—$750.00 12 mos.—$1,000.00

This course is designed for a limited number of qualified physicians who wish to prepare for the American Board of Radiology, and who wish specialized training in a particular field of medicine such as orthopedics, cardiology, etc. Course will be conducted in the Department of Radiology at the Los Angeles County Hospital. Course Directors: Ray A. Carter, M.D., George Jacobson, M.D.

Anesthesia

Date: Course begins by arrangement.

Fee: $300.00 (full time, three months).

Basic principles and techniques involved in administering the various anesthetic agents, including oxygen therapy and operating room care of patients. Open to a limited number of qualified physicians and dentists. Emphasis placed on practical administration of anesthetic agents. Presented at the Los Angeles County Hospital. Course Director: J. S. Denson, M.D.

Contact: Gordon E. Goodhart, M.D., University of Southern California School of Medicine, Division of Medical Extension Education, 1200 North State Street, Box 158, Los Angeles 33, California.

COLLEGE OF MEDICAL EVANGELISTS

Diseases and Injuries of Bones and Joints—Date: July 6-31. Fee to be announced.

Full-Time Basic Science Course in Surgery and Surgical Specialties—Date: October 5, 1953 through June 11, 1954. Fee to be announced.

Contact: H. M. Walton, M.D., Chairman, Postgraduate Division, 312 North Boyle Avenue, Los Angeles 33.

RESEARCH STUDY CLUB OF LOS ANGELES

23rd Annual Clinical Convention of Ophthalmology and Otolaryngology.

Date: January 18 through January 29, 1954. Each applicant must be a member in good standing of the American Medical Association in order to become eligible for attendance.

Fee: $100.00.

Contact: Pierre Violé, M.D., Treasurer, 1930 Wilshire Boulevard, Los Angeles 5, Calif.

INFORMATION

Something for Nothing?

GEORGE U. WOOD, *Oakland*

THE "APPOINTED DAY" for the starting of the National Health Service in England was July 5, 1948. The Minister of Health, Mr. Aneurin Bevan, was responsible to Parliament for seeing that health services of all kinds are available to all who need them. Two plebiscites were called by the British Medical Association before the act was passed. The result of the first showed 90 per cent of the physicians against the proposed act. A few months later a second vote was taken after certain amendments were made, and the medical profession was split 50-50.

One of the reasons it passed so easily was that the people were conditioned for legislation of this type after the many controls and hardships during the war. Sir Allen Daley, head of the London County Council, said the National Health Service was inevitable, because both parties promised it in some form; but had organized medicine presented a united front many of the abuses could have been avoided—and the results different.

Shortly after the act was passed the British Medical Association asked for a meeting with Mr. Bevan in an endeavor to work out the details. Mr. Bevan agreed, and after keeping representatives of the association waiting more than an hour finally appeared and at once subjected the physicians to forty minutes of abuse and insults, stating "I'm not here to waste my time listening to what you doctors want; I'm here to tell you how you're going to practice under the act and what you are going to get."

Medicine was an adjunct of the socialist government of Great Britain for four years. What has that experiment to show us? How has the theoretical blueprint worked out in practice? Are conditions in the United States so closely parallel to those in Great Britain in 1947 that the same radical changes are needed here and now as were adopted then and there? Shall we rush to follow our neighbor's example? Or would it not be better to examine the factual details of this momentous program—and perhaps learn something from our neighbor's mistakes?

The author is executive vice-president of Peralta Hospital, Oakland.

Originally completed in 1951 and recently brought up to date, this article was written by an expert in hospital administration. It states the pitfalls and fallacies of the National Health Service in England so well that it is published for the information of our readers.

With these questions in mind I visited England in 1950. I was not concerned with political theory as such. I wanted to know what direct effects socialist theory, applied to medicine, had had on the medical profession, particularly on hospitals, but even more on that larger and equally interested group which the medical profession serves, the actual and potential patients—in short, the public. I interviewed individuals at all social, economic and vocational levels: workers, foremen, and managers in factories; bank clerks, hospital personnel, attorneys, social welfare workers; general physicians and Harley Street specialists; the head of the dental association, the supervisors of medical schools, officials in the Ministry of Health.

The gigantic program of "political medicine," I found, appeals to one of the most common urges of human nature—the desire to get something for nothing. But that is an appeal that is never really answered; there is always a catch in it. When you try to get something for nothing, you always lose something in the scramble.

The first loss to Great Britain is the virtual liquidation of the general practitioner— of the fine old tradition of the "family doctor" who knows you as a person, not a statistic or a chart record, whom you trust to "see you through."

In Great Britain, the office of the general practitioner has been reduced to a mere clearing house and place for the care of trivial ailments in metropolitan areas. Under the National Health Service he cannot operate or administer treatment in many of the state-controlled hospitals. Some hospitals refuse to allow him inside the door. Others will admit him only when trailing in the wake of a consultant or specialist; for every person requiring hospitalization is referred to a staff member who must be a specialist.

Many patients do require the treatment of a specialist. At the other extreme, a far larger number need only a word of advice and directions for home treatment. As one Middlesex doctor put it: "For every cut, burn, blister, bruise, boil, sore or small abscess, or other trivial injury that becomes serious, there are thousands that respond to home treatment with the help of nature. Crowded waiting rooms and surgeries such as I never had before July 8, 1948, even during epidemics," he continued, "are filled with women and children almost exclusively, and their complaints are for the most part picayune. During the past week I have been consulted by a daily average of 49 women, 23 children, and 8 men. In a large industrial practice usually with approximately equal numbers of both sexes on my list, those figures speak for themselves."

In other words, the chance to get something for nothing by universal "free" medical service brings

on a stampede, even when the service is not necessary. The effect on the quality of that service is obvious. Doctors are overwhelmed almost to distraction, and hospitals are overcrowded beyond all hope of efficiency. The really sick patient cannot be adequately cared for.

The doctors let themselves in for this state of affairs largely because they did not fully foresee what they were getting into, and those who did lacked the organization necessary to present and give effective power to their knowledge.

Now the British Medical Association reports that 75 per cent of the general practitioners—the backbone of the medical profession — wish the clock could be turned back. The 25 per cent in favor of the new system are young men just starting out in practice. There are 8,000 doctors in the Medical Practitioners Union—a frankly Socialist organization. Many general practitioners (not Socialist) like the National Health Service system—probably the poorer ones who want an easy life with a fixed salary, social security benefits, tenure of service, and a pension at age 65. For this they are willing to forego the longer, more exacting road with its challenge to individual effort.

According to an eminent practicing surgeon, "The general practitioner is no longer interested in doing his fair share of the work. Oddly, medical men figure largely on Group Management and Regional Management committees. These medical men with political aspirations and/or leanings are about the worst feature of the National Health Service. If you want to see medical men mishandled, put their own kind in the box seat!"

The specialists on full time basis in hospitals—for example, radiologists, pathologists and anesthesiologists—do not fare so badly. They begin at a stipend of $5,100 a year with an annual increase of $350 up to $7,700—and this income, the doctors told me, goes twice as far in Great Britain as it would in the United States. They are also eligible for annual merit awards as a non-financial incentive.

At the opposite extreme, the young doctor, just admitted to practice, may welcome the security of an assured income. However, the program was not designed for the benefit of members of the medical profession—who like it less the more they see of it—but supposedly for the general public.

The worst feature of the unnatural union of medicine and politics is the involvement of both patient and doctor in Gordian knots of red tape. The doctor is subordinated to the bureaucrat, and the art and science of medicine is reduced to an instrument of politics. Such an arrangement is not only bound to be cumbersome and inefficient, and, through the delays of all political routine, even dangerous—it also opens wide the doors to petty racketeering and tax dodging by the unscrupulous. Such charges have recently been made against dentists.

Many dentists today find that it is better to take National Health Service patients than private patients. Small profits, quick returns! Since the imposition of a charge to the patient of one pound per denture and a shilling on a bottle of medicine, there has been a vast decrease in the amount of dentistry and medication.

But even without this juggling with a system which lays itself wide open to finagling, the patient ultimately pays the price of the red tape in which both he and the doctor are entangled when medical care is made just another cog in the political machine.

One out of every 100 Britons—400,000 in all—is employed in the Ministry of Health. They may know nothing about medicine or hospital administration, but they are well trained as bureaucrats, thoroughly familiar with forms and "channels" and copies in quintuplet. The knots and tangles in which they enmesh the simplest performance are at once maddening to the doctor and dangerous to the patient.

For example, in one hospital that I visited, the cook had become ill and the superintendent had applied for a replacement. That was on January 10. First he must notify the Ministry, giving full information. Ten days later he telephoned the Ministry to ask if a cook had been found. No cook and no information. More telephoning and writing on January 23. No information. On January 25, the Ministry suggested that the superintendent advertise in the local paper—which he might better have done in the beginning. But first, the advertisement must be submitted to the Ministry for approval, and if and when it was finally run it must be labelled, "Cautionary," which means that no worker between the ages of 18 and 45 may apply for the job without the consent of the Ministry of Labor. The Ministry of Labor controls the destiny of all workers between the ages of 18 and 45. A worker may quit his job but cannot accept another without the permission of the Ministry. When I was there on January 31, there was still no cook.

If a surgeon or hospital is in urgent need of an instrument, it is not just bought so that it will be on hand for immediate use. First a detailed description of the instrument is submitted and a statement made as to whether it is to be additional equipment or is to replace another instrument. The request is passed along to a standing sub-committee, which relays it to the Medical Committee, which refers it to the Finance Committee, which sends it to the General Purpose Committee, which forwards it to the Economic Committee, which may or may not grant the request.

Even if this final report is favorable, the hospital has waited for its equipment, or the patient for his operation, for months before the order has gone its tortuous way.

On the day I visited a certain hospital, the administrator apologized for its dreary and run-down appearance—a matter of great importance to the morale of the patient, as every administrator knows. The administrator was trying to get some redecorating done, but since the law requires the approval of the Ministry for any repairs costing more than $100, he had been waiting for months for permission to repaint the hospital corridors—for the first time, incidentally, since before the war.

It is small wonder that, to American eyes, the hospital administrators of Great Britain seem inefficient and lacking in initiative. They are so trammeled in red tape, and so beset with government committees standing over them telling them how to run their hospitals—a business to which they have brought years of training and experience—that they are inclined to throw up their hands and say, "Oh, what's the use?"

The hospitals of England are badly overcrowded and understaffed. Fifty thousand hospital beds, at the time of my visit, were closed because of a shortage of trained personnel.* This is hardly surprising, since under wage fixing the maids are paid more than fourth year registered nurses. The pecuniary incentive to enter the nursing profession is small when a fourth year state registered nurse receives $674 a year, of which $281 is deducted for board, lodging, and uniforms, leaving a take-home pay of $393 a year, or approximately $33 a month.

Just as the Harley Street specialists are not affected by the National Health Service and are as busy as ever with patients who are willing to pay a private fee for expert advice, so the hospital patient can have a bed in a private ward by paying for it plus an additional 25 per cent for better food and nursing.

From this anomalous situation it is apparent that medical care under Socialism is inefficient, and that better medical care simply plays leap-frog over Socialism. You may get something for nothing, but you still get what you pay for. This, perhaps, is a notable example of the British procedure known as "muddling through." From my observation, "muddling" is indeed the word for it!

On the appointed day, July 5, 1948, the preponderance of voluntary and municipal hospitals together with their premises, equipment, furniture and other movable property were transferred to and vested in the Minister. The institutions taken over include maternity homes, tuberculosis sanatoria, infectious disease hospitals, provision for the chronic sick, mental hospitals and mental deficiency institutions, accommodations for convalescent treatment, rehabilitation, and all forms of specialized treatment.

The Minister at the same time also took over all the liabilities of these hospitals, institutions and services. In other words, he took them over as "going concerns." All the property taken over by the Minister is vested in him free of any *preexisting trust*—that is, it is at the free disposal of the Health Service.

Under the act, all endowments held by the voluntary hospitals, other than teaching hospitals, were taken over by the Minister and pooled in a Hospital Endowment Fund. The Minister is empowered to use the capital of this fund first to meet the existing debts and liabilities attaching to the voluntary hospitals, and to apportion the income received from the balance of capital among the Regional Hospital boards and Hospital Management committees.

The high-handed procedure by which hospitals for the care of the sick were taken out of the hands of trained professionals and made a cog in the political machine was nothing so blatant as straight confiscation. Operation under the National Health Service is strictly voluntary. One is irresistibly reminded of the situation in Russia, where persons conform "voluntarily"—or else.

In Great Britain, 2,000 hospitals—about 90 per cent—thus "voluntarily" allowed themselves to be taken over by the politicians and nationalized. But 244 declined to subject themselves to political medicine. Little is heard of these "disclaimed hospitals," as they are called. I was particularly interested to see how they fared and especially whether they were in any way penalized for their recalcitrance.

The "disclaimed hospitals" which declined to give up their standing and principles "voluntarily" are indeed the stepchildren of the hospital system in Great Britain. They are divided into three classes: trade union hospitals, supported by union dues; hospitals operated by religious and fraternal orders, supported by contributions and endowments; and nursing homes, which correspond to independently operated non-profit hospitals in this country. These receive no financial assistance from the socialist government. But the government has its eye on them nonetheless. With the hope of bringing them "voluntarily" into the fold, it puts every possible obstacle in the way of their successful operation. In expansion, purchase of supplies, remodeling, improvements and the promptness with which requirements are met, the "disclaimed hospitals" are discriminated against and preference given to the politically-operated, state-controlled hospitals.

*Recent information reveals that between 30,000 and 40,000 hospital beds are closed. Many of these beds are dispersed war-time beds remote from centers of population. They present great staffing difficulties in peacetime, even without a nursing shortage.

The result is an inevitable lowering of standards. The price of freedom comes high. Nevertheless, despite these severe handicaps, the independent or disclaimed hospitals are not boycotted by patients. One that I visited may be taken as an example. It has 140 beds and a personnel of 450. Although the rates are high—the average room charge is $147 a week—it is operating to capacity and has a waiting list. This hospital is supported by specialists and in it are done considerable outpatient, laboratory and x-ray work. It is hard to escape the conclusion that the value of voluntary non-profit hospitals like those in the United States is recognized even in Socialist Great Britain.

From my own informal but extensive poll of public opinion, I think there is no doubt that the people of Great Britain will not vote the system out—they have been well indoctrinated with the "something for nothing" principle. The doctors were caught napping and are now stuck with it. It is generally conceded by the medical profession that independent practice of medicine in Great Britain is doomed to extinction within the next ten years.

Has the success of political medicine in Great Britain been so striking, and is the situation in the United States in 1953 so similar to that of Great Britain in 1947, that we should rush pell mell to vote the same system into effect here?

The success of the experiment, I found from personal investigation, is, to put it mildly, far from unqualified. And the situation which brought it about is far from parallel to our own. The National Health Service Act was a policy of desperation, born of the abnormal conditions of war and the state of bankruptcy into which voluntary non-profit hospitals had fallen. Neither of these conditions applies to America today.

Moreover, the American public has been bred to different standards in the treatment of illness than those prevailing, by long custom, in England. In Britain, 70 per cent of all babies are born at home, without hospital facilities; 90 per cent are delivered by midwives with no doctor in attendance.

During the four years of political medicine, it is true that infant and maternal mortality rates in England have shown improvement. But to ascribe this improvement to political control of medicine is to fall victim to the ancient fallacy of *post hoc, ergo propter hoc.* The mere fact that two things happen concurrently is not adequate reason to believe that one is the effect of the other.

The improvement, as a matter of fact, has not been proportionally as great as in the United States, where freedom in the practice of medicine still flourishes. The credit taken by the Socialist government ignores the medical fact that newer treatments and drugs have lowered the infant and maternal death rate all over the world, regardless of politics.

In America, one of the greatest advances in hospital procedure has been the discovery that the sooner most patients are back on their feet, the quicker and more complete their restoration to normal health. The average length of hospitalization for an American patient is six or seven days. In 2,400 hospitals of England and Wales, I found, the average stay is 20 days.

These differences between the situation here and that which obtained in another country must be taken into account lest we somehow find ourselves the owners of an odious solution for problems we do not have. Ours is not a problem of finding something —almost anything—to make a broken-down mechanism function somehow. We do need to improve a mechanism which is already functioning well, although not perfectly. What we want is not something passable to replace something bad, but something better to replace something good. We need to develop a nation-wide, comprehensive, coordinated system of health insurance at a cost the public can afford. We need to do this without making physicians and surgeons and men and women qualified and trained to medical and hospital service a cat's paw of politics.

American doctors have not been caught napping. They are organized for action—not as just another pressure group motivated by self-interest, but as those best qualified to examine the problem in all its complexity and inform and advise the public in the promotion of a program neither hasty nor makeshift nor doctrinaire, but wise and considered and constructive, to bring better medical care to more people.

Everywhere I went in England I heard from every side the statement: "You are merely ten years behind us; you will come to the same thing eventually." Will we? That depends on whether political medicine is an irresistible trend or the result of specific conditions local to time and place.

From England I returned with this strong conviction: If we are to preserve the free enterprise system which has made America the greatest nation in the world, medicine's special task in the struggle to do so is a concerted effort to broaden the scope of good medical and hospital insurance plans.

The private practice of medicine and the voluntary hospital system are living expressions of the free enterprise system. If they fail to grow and hold the confidence of the people, the clammy hand of Statism, Socialism and Communism will crush to earth the finest medical and hospital system in the world.

450 Thirtieth Street.

Study of Relations Between Osteopathy and Medicine

Report to the House of Delegates of the American Medical Association of a Committee for the Study of Relations Between Osteopathy and Medicine,* June 1953.

THE COMMITTEE. In 1951, the President of the Association reported to the Board of Trustees that the relations between medicine and osteopathy presented widespread problems involving a majority of the states to some degree. He had believed previously that these problems were localized to certain areas but found in the course of visiting many states that this was not the case.

The Board of Trustees appointed a committee to inquire into the matter and confer with representatives of the osteopathic profession. A number of informal meetings and one formal meeting were held. The latter was attended by the ranking officers of the American Osteopathic Association.

In his exaugural remarks to the House of Delegates in June 1952, the retiring President called this situation to the attention of the House of Delegates. The representatives of the American Osteopathic Association had informed the committee of the American Medical Association that the curricula of the colleges of osteopathy consisted mainly of courses in medicine and surgery and that the quality of instruction in these colleges could be improved if more doctors of medicine were willing to teach in these colleges. The President further raised the question as to the validity of the classification of modern osteopathy as "cultist" healing.

The reference committee considering this report recommended and the House directed that a committee be appointed by the Board of Trustees to confer further with representatives of the osteopathic profession when and if requested. The Board appointed a committee consisting of Drs. E. Vincent Askey, F. J. L. Blasingame, Edwin S. Hamilton, Arch Walls and John W. Cline.

Due to additional matters coming before the Board of Trustees at the Clinical Session in December 1952, the Board appointed another Committee for the Study of the Relations Between Osteopathy and Medicine. This committee, composed of the same persons, was directed to investigate these relationships and report to the House in June 1953.

The committee has gathered and reviewed considerable data derived from a variety of sources including questionnaires sent to every state medical association and county medical society and to those individuals who receive the Secretary's Letter.

The questionnaires were designed by the committee but were submitted to the secretary and assistant secretary of the Association, the director of public relations, the secretary of the Council on Medical Service, the director of the Bureau of Medical Economic Research and the attorney of the Association for review, criticism of the content and phraseology and additions and deletions. Others also were consulted. These conferences resulted in numerous changes in the original draft. The final questionnaires were, therefore, the product of many minds. An effort was made to phrase the questions simply but to make them adequate to provide the necessary information. A conscious effort was made to avoid "weighted" questions and terminology.

The questionnaires were returned to and analyzed by the Bureau of Medical Economic Research. The associations of 36 states and that of the District of Columbia responded in time to be included in this study. Twelve did not reply.

The questionnaires directed to county societies and individuals were less extensive but covered much the same material. The return was not as large as had been expected but the pattern of replies followed that of the state associations fairly closely although individual opinions were often at variance. The similarity of replies was sufficient to warrant the conclusion that the replies of the state associations represented majority opinion within the states.

The following state medical associations replied:

Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Georgia, Illinois, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

In addition, a letter propounding certain questions was sent to the deans of the schools of osteopathy. One responded directly. A composite reply was furnished to the committee by the Conference Committee of the American Osteopathic Association at a meeting of the two groups in Chicago, May 15, 1953. The replies were placed in writing subsequently and forwarded to the chairman.

The committee renders this report:

Historical. Osteopathy was founded in 1874 by Dr. Andrew Taylor Still, a practicing physician. He promulgated a concept that all "disease is the result of anatomical abnormalities followed by physiological discord," and that the "anatomical abnormalities" consisted of lesions of bones, joints and their supporting structures. These, in turn, induced disturbances of nerve and vessel function which produced pathological conditions in other tissues. He inveighed against drugs, serums, vaccination

*Drs. E. Vincent Askey, John W. Cline, Edwin S. Hamilton, Arch Walls and F. J. L. Blasingame.

and "electricity, x-radiance, hydrotherapy or other adjuncts." He believed that "Osteopathy is an independent system and can be applied to all conditions of disease . . ." and that surgery should be advocated only "as a last resort." He said, "We believe that our therapeutic house is just large enough for osteopathy and that when other methods are brought in just that much of osteopathy must move out."

The original concept of Dr. Still could be classified only as "cultist" healing. The only justification advanced in defense of it is that drug therapy of that day with few exceptions was not specific or very effective.

The earlier schools followed the dicta of Dr. Still. Some advocates adhered to them with religious fervor and became extremely bitter toward orthodox medicine as a result of the legitimate criticism made of the then osteopathic concept.

Since that time great evolutionary change has taken place in osteopathy. It is difficult to trace the chronological course of this development and to document it with relation to time. Apparently no historical account exists. We were unable to find one and the American Osteopathic Association could not furnish us with a reference to one.

A comparison of osteopathy at the turn of the century and at the present time, however, makes it obvious that such evolution took place. In its effort to develop an orderly account of this change the committee consulted books, periodicals and numerous individuals. It then propounded questions to the deans of osteopathic schools and the representatives of the American Osteopathic Association. In addition, the committee investigated the curriculum development and the legal requirements for licensure of osteopaths at various stages. Certain facts which establish a partial history were developed.

As pointed out previously, the early schools adhered to the drugless and "cultist" theories of Dr. Still. Of the six existing schools most apparently began as institutions following these teachings. Some may have begun on a broader base but all largely followed his theories.

At some time all departed from this dogma and began to turn toward the pattern of medical schools. The exact time of the departure of each is difficult to ascertain.

The composite answer of the schools of osteopathy states that some aspects of drug therapy always were included in their teaching but these were limited in extent. All schools instituted informal teaching of pharmacology prior to the listing of formal courses in printed announcements. We believe that pharmacology was included because the inadequacy of drugless therapy was recognized but that formal listing of such courses was delayed out of deference to the opposition of the so-called "old religionists" in osteopathy.

One school gave informal instruction in drug therapy prior to 1913, and in that year offered formal courses in pharmacology and materia medica. Other schools followed this pattern and in 1940 the last school made announcement of a formal course in pharmacology after having taught the subject for years without according it an official listing.

As nearly as we can ascertain, pharmacology has been taught in one school for more than 40 years and in most, if not all schools, for more than 25 years. It has been taught on a formal and announced basis in all schools for periods varying between 13 and 40 years.

Another approach to documentation of the evolution of osteopathy is found in the history of licensure. The current extent of licenses will be discussed later. Differing types of examining boards exist. Some consist solely of doctors of medicine, some solely of doctors of osteopathy and some are composed of both. In the last type, doctors of medicine usually, and probably always, predominate in numbers.

In 1913, and perhaps as early as 1900, composite boards granted full licenses to practice medicine and surgery to osteopathic graduates. Since that time, doctors of osteopathy have become eligible to full licensure in a majority of states.

In 1922, one state established, by law, entrance requirements and curriculum requirements, identical with those required of medical schools, which had to be fulfilled prior to admission to examination for full licensure by the osteopathic examining board. The osteopathic board in this state is said to have maintained high standards since that date. One school qualified to meet its requirements in 1922, two by 1940, and the remaining three by 1947.

The Osteopathic Concept. The original ideas of Dr. Still were mentioned earlier. As the evolution of osteopathy has taken place the concept of osteopathy has changed. Concise definitions of modern osteopathy and the current osteopathic concept are difficult to find.

One expression of the osteopathic concept is found in the following: "Stated simply, the principles are: (1) The normal body contains within itself the mechanisms of defense and repair in injuries resulting from trauma, infections and other toxic agents; (2) the body is a unit and abnormal structure or function in one part exerts abnormal influence in other parts; (3) the body can function best in defense and repair when it is in correct structural arrangement."

A modification of the foregoing is found in another source:

The statement, "The body contains within itself the power to cure all of its curable ills," is subject to certain qualifications, which must be applied to the patient under consideration. Some of these are:

1. The body must be in the best mechanical adjustment possible.

2. The body must have the most adequate circulation possible.

3. The body must have available, from food or medication, the required chemicals for proper function.

4. The body must have a physiological reserve to affect the necessary compromise with its environment.

5. The body must be relieved of all impediments to proper function.

6. The body must be relieved of all sociopsychological impediments which must be recognized and dealt with as effectively as possible.

In addition, one encounters statements such as "Contrary to erroneous opinions of persons not acquainted with the basic principles of osteopathy, it has never been a drugless school of practice. Surgery and the use of drugs always have been included within its practice."

The committee reviewed a series of six articles relative to the osteopathic concept appearing in the *Forum of Osteopathy*, a publication of the American Osteopathic Association, from March to August 1952. These articles were based upon statements by many individual osteopathic physicians with editorial comment by the author of the compilation.

The statements quoted are often somewhat contradictory and the author comments upon the validity of the differing points of view expressed in them. Predominant opinion seems to stress that osteopathy encompasses the full field of medicine and that its present and future development depend upon an attitude of acceptance of new theories and new methods of diagnosis and treatment of disease as the value of these methods is demonstrated.

Discussions with leaders of the osteopathic profession and teachers in their schools reflect some difference in points of view but their opinions are almost unanimous that the only basic difference between osteopathy and medicine at the present time is the degree of emphasis placed upon manipulative therapy. It is stated by some that manipulative therapy has not been subjected to critical evaluation and that thorough investigation of its value by trained clinical research workers in our medical institutions would be welcomed. There is an inference that such evaluation might exert great influence upon the future of osteopathy.

As will be shown by an analysis of the curricula of the colleges of osteopathy, medicine as we understand the term, in its various branches probably occupies more than 90 per cent of the instructional hours. The total clock hours of instruction in osteopathic schools is on the average about 25 per cent greater than the corresponding time devoted to instruction in medical schools. The increased number of hours, in the opinion of medical educators, is a disadvantage rather than an advantage but demonstrates that the number of clock hours devoted to teaching of medicine in osteopathic schools is at least as great as that in medical schools.

Colleges of Osteopathy. There are six osteopathic schools currently operating in the United States. These are:

1. Kirksville College of Osteopathy and Surgery, Kirksville, Mo., 1892.

2. College of Osteopathic Physicians and Surgeons, Los Angeles, Calif., 1896.

3. Philadelphia College of Osteopathy, Philadelphia, Pa., 1898.

4. Des Moines Still College of Osteopathy and Surgery, Des Moines, Iowa, 1898.

5. Chicago College of Osteopathy, Chicago, Ill., 1900.

6. Kansas City College of Osteopathy and Surgery, Kansas City, Mo., 1916.

Some of the present schools have resulted from mergers of other schools and some have undergone changes in name similar to the evolution of some of our schools of medicine. The dates indicate the founding of the original school in continuous operation.

The organizational structure of the colleges of osteopathy is essentially identical. All are incorporated as non-profit educational institutions governed by boards of trustees which appoint the administrative officers and the faculties. None are operated for profit. None is a part of or associated with universities or other colleges.

None is tax supported. Finances are derived mainly from contributions by alumni and tuition fees. A well organized and vigorous campaign begun by the American Osteopathic Association in 1943 has collected over five million dollars. Some contributions come from private philanthropy. The United States Public Health Service makes grants to all schools for such projects as education in cancer and heart disease. The Navy and the U. S. Public Health Service have made some grants for research. One school derives minor support from the state for V.D. and indigent care.

Faculties. Of 487 faculty members listed in the six colleges, 32 are recorded as having degrees of A.B. or B.S. without additional degrees; 273 have

the degree D.O. only; 96 have both A.B. or B.S. and D.O. degrees; 13 hold M.A. or M.S. degrees only; 36 are listed as having M.A. or M.S. and D.O. degrees; 26 have Ph.D. standing; 10 are listed as M.D. and 6 have the degree of D.D.S. Reports from the osteopathic colleges show that there are 15 doctors of medicine teaching in five schools at the present time.

In some catalogs only the degree is listed. In others, however, the institution conferring it also is listed and practically all the A.B., B.S., M.A., M.S., and Ph.D. degrees so listed were conferred by well recognized educational institutions. Some of the M.D. degrees were granted by currently approved schools of medicine. Others were not.

The great majority of the faculty members holding bachelor's and master's degrees alone and those with Ph.D. and M.D. degrees teach in the fields of basic sciences. Some with additional D.O. degrees are in clinical fields.

Admission Requirements and Students. All schools require three years of preprofessional study of a grade leading to a baccalaureate degree in an acceptable university or college and the curriculum content of preosteopathic course requirements is the same as that for admission to schools of medicine.

Analysis of data from all schools shows that 49 per cent to 78 per cent of the students enrolled in present classes hold the degree of A.B. or B.S. Degrees of M.A. or M.S. are not uncommon and an occasional Ph.D. is listed. Sixty-four per cent of all current students hold baccalaureate or higher degrees. The most recent classes show substantially higher figures.

Many students have matriculated from teachers' or junior colleges but many from outstanding colleges and universities, some of which have medical departments. Among these Michigan, Missouri, Illinois, Minnesota, Wisconsin, Iowa, Kansas, Pittsburgh, Ohio State, Indiana, New York University, Washington University, the University of Washington and Northwestern contribute substantial numbers and Harvard, Yale, Cornell and Columbia are represented. This proportion is progressively increasing and that from lesser institutions is decreasing.

Some schools select students partially on the basis of aptitude tests.

Classes. The classes vary from 60 to almost 100 students each, depending upon the school. The enrollments of the schools in 1952 varied from 240 to 368 and totaled 1,921 students. Every state was represented. Enrollments reflected the geographical location of the school to some degree but the larger states and those with larger numbers of doctors of osteopathy and wider scope of licensure furnished the bulk of the students. The largest numbers had residence in California, Michigan, Pennsylvania, Missouri, Ohio, Texas, Illinois, New York, Iowa, New Jersey, Oklahoma and Florida. A number of students came from foreign countries.

Curriculum. Review of the catalogs shows that the portion of the curriculum devoted to teaching of osteopathic theory and technique varies on a mathematical basis—from 4 to 14 per cent of the total number of clock hours. A breakdown of the courses, however, shows instruction in history taking, physical examinations, physical therapy and rehabilitation sometimes included under osteopathic titles. On the other hand, osteopathic instruction is integrated with other clinical teaching.

It is difficult to determine the exact number of hours devoted to osteopathic teaching in contradistinction to basic sciences and medicine in its various fields and the proportion of these hours to the total program. It is estimated that an average of more than 90 per cent and perhaps 95 per cent of the instructional hours are devoted to basic sciences, the fields of medicine, surgery and obstetrics. These courses of instruction and the distribution of hours correspond closely to those of medical schools.

All colleges of osteopathy require four year courses. Most operate upon a semester system but the quarter plan exists in some. The total clock hours vary from 5,044 to 6,526 in different schools and average 5,756 for all schools.

The distribution of hours devoted to didactic, clinical and laboratory instruction varies. The same is true of medical schools but the impression is gained that somewhat greater emphasis is placed upon didactic teaching in schools of osteopathy. In some schools, however, introduction to clinical subjects occurs early and is fairly extensive.

Quality of Instruction. The committee had no entirely satisfactory method of evaluating the quality of instruction in clinical subjects. Results of examinations in basic sciences in the states requiring such examinations prior to admission to practice furnish a reasonable basis upon which to determine the quality of instruction in preclinical subjects.

Twenty-one licensing jurisdictions require such examinations. In 1952, 3,263 doctors of medicine or medical students and 276 osteopaths or osteopathic students took basic science examinations. The ratio of osteopathic to medical candidates was about that of enrollments in schools of osteopathy to schools of medicine. Eighty-eight per cent of the medical and 84.5 per cent of the osteopathic candidates passed the 1952 basic science examinations. This is in marked contrast to 1942, when 85.6 per cent of medical and 55.4 per cent of osteopathic

candidates passed. In 10 years medical candidates showed 2.4 per cent improvement in passing basic science examinations and that for osteopathic candidates was 29.1 per cent.

The committee had one confidential communication bearing upon the quality of instruction in colleges of osteopathy as compared with schools of medicine. While this was an indirect approach and incomplete answer to the question it covered both types of schools on a wide basis.

At the end of four years of schooling the average medical student had acquired more medical knowledge than had the corresponding osteopathic student. The margin was definite but no mechanism existed to determine its extent. It must be recognized that there is variability in both classifications of school.

This same source states that the performance of a considerable number of students in the best osteopathic schools is now superior to that of the students in some medical schools. The committee believes the quality of instruction in medical schools to be definitely superior to that of osteopathic schools. There is evidence that education in osteopathic schools is improving but improvement is impeded by a lack of trained teaching personnel. This seems to be particularly true in the clinical fields.

Graduate Training. The American Osteopathic Association approves hospitals for intern and residency training. Seventy-six hospitals are approved for intern and 38 for residency training. The committee is not in a position to evaluate this training.

Number and Distribution of Osteopathic Physicians. Eleven thousand eight hundred and twenty-seven osteopathic physicians were registered in 1952. Of this total 207 were in Canada and foreign countries, 14 were in the service; 145 were out of practice; 11,461 were in practice in 48 states, the District of Columbia, Hawaii and Alaska.

According to total number of licenses, osteopathic physicians were distributed principally in the following states:

California	1,976	New Jersey	358
Missouri	1,120	Oklahoma	348
Pennsylvania	1,081	Massachusetts	291
Michigan	1,062	Florida	278
Ohio	629	Kansas	227
Texas	531	Maine	215
Iowa	472	Colorado	182
New York	472	Wisconsin	160
Illinois	416	Washington	158

This, however, does not give a true picture of distribution with reference to population. Certain small population and sparsely settled states show greater numbers in proportion. Among these are Arizona with 96, New Mexico 106 and West Virginia 129. Some states with large populations show relatively small numbers of osteopathic physicians. Connecticut has 76, Minnesota 92 and most of the southern states very few. Distribution in general tends to bear some relationship to population, geographical location, and particularly to the scope of state licensure.

Within the individual states distribution tends to follow population and trading centers much after the pattern of that of doctors of medicine. There are, however, many exceptions. As an example, certain areas in Missouri with low ratios of doctors of medicine to population show comparatively high ratios of osteopaths. The same is true of northern Maine and the upper peninsula of Michigan. There are widely distributed towns and rural areas in many states in which the only care of illness immediately available is by osteopaths or where they outnumber doctors of medicine.

Volume of Care Rendered by Osteopathic Physicians. There is no clear method of determination of the proportion of medical care rendered by members of the osteopathic profession. It is estimated that about 175,000 doctors of medicine and 11,400 doctors of osteopathy are in active practice in the United States. With this as the sole basis of computation approximately 6 per cent of the medical care of our people is rendered by osteopathic physicians.

Scope of Licensure and Administration. In some states the scope of licensure is clear. In others it is not. Courts in various states have interpreted identically worded statutes differently. In some the scope of license has not been adjudicated. This confusion is reflected in the state association, county society and individual replies to the questionnaires.

The June 1952 digest of state laws published by the American Osteopathic Association states that the graduates of the six schools of osteopathy are eligible to full license to practice medicine and surgery in the following states:

Arizona, California, Colorado, Connecticut, District of Columbia, Delaware, Florida, Hawaii, Indiana, Iowa, Kentucky, Maine, Massachusetts, Michigan, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

Licenses permit limited use of drugs but no major surgery in: Arkansas, Georgia, Idaho, Louisiana, Minnesota and North Dakota.

Licenses permit only manipulative therapy in: Alabama, Illinois, Kansas, Maryland, Mississippi, Montana, North Carolina and South Carolina.

There is room for legal argument concerning the exact meaning of the law in certain instances, but

this list corresponds fairly closely with the 1949 survey of the Michigan State Medical Society and with the informal opinion of the attorney of the American Medical Association. For the purpose of general consideration, it can be accepted as substantially accurate.

Most jurisdictions which grant unlimited licenses do so upon the basis of the original license without additional requirements. In a number it depends upon an examination identical with that for medical licensure and given by the medical licensing body. In some the date of graduation is a determining factor. In some states additional training and/or additional examination is required.

In some states only one type of license is granted. In others limited and unlimited licenses both exist. In the country as a whole, the numbers and proportions of limited licenses are diminishing rapidly.

The educational standards of all osteopathic schools are now, and for some time past have been, such that their graduates are eligible to unlimited licensure in all states granting such licenses.

Doctors of osteopathy tend to settle in areas in which unlimited licenses are granted. The scope of licensure in general has been gradually extended and we are informed that the legislatures of several states have measures designed for this purpose under consideration at present.

The Public and Osteopathy. Eighteen state associations indicate that patients do not readily distinguish between doctors of osteopathy and doctors of medicine. Two were in doubt and two do not answer. Fifteen believe they do so.

Ten associations believe public use of osteopaths is increasing, 20 that it is remaining static and four that it is decreasing.

In 20 states osteopaths participate in voluntary health insurance programs. In 25 they render care to injured workmen under industrial accident laws. They also serve in the Veterans Administration. There is permissive legislation allowing them to serve in the Armed Services and the United States Public Health Service but as far as we know, none has been accepted.

Postgraduate Education. In 19 states no opportunity is provided for osteopaths to obtain instruction in courses sponsored by state medical associations, county medical societies, universities or hospitals. In 16, no answer is provided to the question. In two states osteopaths have access to courses given by state associations and county societies and by health departments in five.

Relationship Between Doctors of Medicine and Osteopaths. It is considered ethical to accept patients referred by osteopaths in 23 states and unethical in 11. Consultation with osteopaths is considered ethical in eight states and unethical in 24. Joint care of a patient is considered ethical in eight states and unethical in 25.

Twenty-nine state associations believe the quality of instruction in osteopathic schools would be improved if doctors of medicine freely participated in teaching in them. Eight do not reply. Twenty-nine believe the level of osteopathic practice would be improved if postgraduate courses were more readily available to osteopaths. Twenty-two believe the over-all care of illness in their states would be improved if doctors of medicine freely participated in undergraduate and postgraduate osteopathic education. Three believe there would be no change. Three believe it would be lowered. Nine do not reply.

If ethical restrictions of association between doctors of medicine and osteopaths were removed, 18 state associations believe the over-all care of illness would be improved. Seven believe there would be no change. Seven believe it would be lowered. Five do not reply.

Fourteen state associations classify modern osteopathy as practiced in their states as "cultist healing." Twenty-three consider it *not* to be "cultist healing" according to the definition of the Principles of Ethics of the American Medical Association.

Fifteen favor removal of ethical restrictions on voluntary association between doctors of medicine and doctors of osteopathy. Sixteen oppose such action. Five do not reply and one is non-committal.

SUMMARY

1. According to published statements, and in certain states by law, the requirements for admission to schools of osteopathy are the same as those for schools of medicine. In one school 78 per cent of the students hold A.B. or B.S. degrees. The average for all six schools shows 64 per cent possess baccalaureate or higher degrees. Only a small number of these degrees were achieved after admission to osteopathic school.

2. The curricula of osteopathic schools contain the same subjects taught in schools of medicine. Minor portions of the curricula are devoted to osteopathic courses and manipulative therapy.

3. The standard of education in osteopathic schools has improved materially in recent years. As far as this applies to basic sciences the fact is demonstrated by the results of basic science examinations. It is far more difficult to evaluate the education in clinical subjects. Such information as is available indicates some but lesser progress in this field.

4. The opportunities for doctors of osteopathy to obtain postgraduate training are meager.

5. The state medical associations, the county societies and individual physicians predominantly believe that the level of osteopathic education, the standards of practice and the over-all care of the sick would be improved if doctors of medicine were able freely to participate in undergraduate and postgraduate education of osteopaths.

6. This belief is shared by leading osteopaths and osteopathic educators.

7. Doctors of osteopathy render medical and surgical care to a large but undetermined number of people of this country. There is no way of ascertaining the exact number but millions of patients are involved.

8. The scope of the osteopathic license varies from limitation to manipulative therapy in eight states to extensive or complete practice of medicine in 35 states. The trend is toward the extension of the scope of licensure.

9. Majority opinion of medical associations and individual physicians indicates that the quality of medicine practiced by osteopaths is variable and it probably differs in different states.

10. Medical opinions of osteopathy naturally vary. It is scarcely possible to compare osteopathy in such states as Maryland and Wisconsin. In the former osteopathy is limited to manipulative therapy and in the latter the state board of medical examiners recognizes the six schools of osteopathy as approved schools of medicine. It is likewise impossible to compare osteopathy in Alabama which has four osteopaths to that in California with almost 2,000. Similar difficulties are encountered even in such adjacent states as Iowa and Illinois, Missouri and Kansas, and Texas and Arkansas.

11. In 20 of the 37 states replying to the questionnaire, doctors of osteopathy participate in voluntary health insurance plans and in 18 of these in Blue Shield plans. A few states specify that the basis of participation is not quite the same as that for doctors of medicine. In 1952, six of the highest 25 individual payments by Michigan Medical Service were made to osteopaths. Osteopathic hospitals and in some instances osteopaths are compensated by Blue Cross plans.

12. In 25 of the states reporting, doctors of osteopathy render care to injured workmen under the industrial accident laws.

13. Twenty-three of the 37 states replying consider it ethical for doctors of medicine to accept referred patients from osteopaths. Eight states hold it ethical to consult with and participate with osteopaths in the care of patients. In most states some physicians consider all three categories of association to be ethical.

14. On the whole the states in which state association and individual opinions of osteopathy are highest are the states in which osteopathic licenses are unlimited or extensive. Where the scope of licensure is sharply limited or the osteopaths were few in number the opinions are less favorable.

15. In many widely distributed towns and villages all or a large part of the immediately available care of illness is furnished by osteopaths.

16. Public acceptance of osteopathy is extensive. Ten state associations report the use of services of osteopaths to be increasing, 20 that it is remaining static and only four that it is decreasing. A large number of people, through necessity, failure to distinguish between medicine and osteopathy or by choice receive their care of illness from osteopaths. Osteopaths serve in the Veterans Administration.

17. Twenty-three state associations classify modern osteopathy as practiced in their states as *not* being "cultist healing" according to the definition of our Principles of Ethics. Fourteen consider it *to be* "cultist healing."

18. Fifteen state associations favor removal of all ethical restrictions upon voluntary association between doctors of medicine and doctors of osteopathy. Sixteen do not.

19. There is difference of opinion among osteopathic physicians as to the relative importance of and the place which manipulative therapy occupies in the treatment of disease. Some hold its position to be important and others to be minor. An increasing number, particularly of more recent graduates, disavow it.

20. It is the opinion of the committee that the official viewpoint of the representatives of the American Osteopathic Association is that osteopathy includes the entire field of medicine and surgery but integrates manipulation of musculoskeletal structures with medical and surgical methods of therapy. No diagnostic or therapeutic procedure used in medicine or surgery is excluded.

Osteopathy has undergone a process of evolution which has brought it to a point of such similarity to medicine that no marked fundamental differences exist between medicine and osteopathy.

The entrance requirements for schools of osteopathy and schools of medicine are identical. The curricula have the same content, except for the inclusion of osteopathic theory, diagnosis and treatment. The period of instruction in both instances is four years. The clock hours devoted to teaching basic sciences, medicine and surgery are as great in schools of osteopathy. The level of instruction in basic sciences is demonstrated by the record of osteopathic candidates in examinations in these sub-

jects. Indirect and incomplete methods of evaluation of the quality of instruction in clinical subjects, insofar as they apply, indicate progressive improvement in this field.

There are unquestionably doctors of osteopathy still in practice who explain disease upon antiquated osteopathic theories and who rely solely upon manipulative methods of therapy, but their number is constantly decreasing. It might be argued upon this basis that osteopathy still remains "cultist healing."

Instruction in all fields of medicine and surgery has been given in some osteopathic schools for 40 years and formally in all osteopathic schools since 1940. Osteopathic teaching is integrated with these courses to some degree. It might be argued upon this basis that "cultist" aspects remain.

Nevertheless, the committee after careful study and thoughtful consideration is of the opinion that the teaching in osteopathic schools at the present time, and for some years past, does not constitute "cultist healing" as defined in our Principles of Ethics and that this stigma should be removed.

The committee believes that the level of osteopathic education and hence osteopathic practice would be raised if more doctors of medicine taught in schools of osteopathy and in postgraduate courses. This point of view is shared by a large majority of state medical associations. The only method by which this can be done is to eliminate the stigma of "cultism." As long as this stigma remains most doctors of medicine will be reluctant to participate in the education of osteopathic students and in providing postgraduate education.

Doctors of osteopathy render medical care to millions of patients.

The objectives of the American Medical Association and its responsibilities are to improve the health and medical care of the American people. The committee is of the opinion that these purposes would be served by making it possible for schools of osteopathy to draw upon the services of doctors of medicine as teachers. We should assist improvement in the education of osteopathic physicians.

The committee believes that the American Medical Association should encourage state medical associations to aid in the improvement of osteopathic postgraduate education where the state associations find this desirable and feasible.

In view of the variation in the scope of osteopathic licensure by the states, probable variation in the level of osteopathic practice in different states, widely divergent opinions and differing local conditions, the committee is of the opinion that any national policy governing the individual relationships of doctors of medicine to osteopaths would not apply equally to all states. In keeping with the autonomous nature of state associations and democratic principles the responsibility for regulation of these relationships should be assumed by the several state medical associations.

The committee is of the opinion that the meetings it has held with the Conference Committee of the American Osteopathic Association have been productive of greater understanding between the two professions and a friendly approach to mutual problems. It would be wise to continue this type of liaison in the future.

The committee also is of the opinion that it would be helpful for similar committees to be created on the state level where state associations find it desirable. Much public wrangling and acrimonious conflict might thereby be avoided.

In the past much publicity has been given to the prospect of amalgamation of the medical and osteopathic professions. While this may be an ultimate eventuality there is no indication that it would be desirable or possible in the near future. Many years will elapse before differences of opinion and prejudices will be sufficiently resolved to make such a step possible.

RECOMMENDATIONS

The committee recommends:

1. That the House of Delegates declare so little of the original concept of osteopathy remains that it does not classify medicine as currently taught in schools of osteopathy as the teaching of "cultist" healing.

2. That the House of Delegates state that pursuant to the objectives and responsibilities of the American Medical Association which are to improve the health and medical care of the American people, it is the policy of the Association to encourage improvement in undergraduate and postgraduate education of doctors of osteopathy.

3. That the House of Delegates declare that the relationship of doctors of medicine to doctors of osteopathy is a matter for determination by the state medical associations of the several states and that the state associations be requested to accept this responsibility.

4. That the Committee for the Study of Relations Between Osteopathy and Medicine or a similar committee be established as a continuing body.